SWF

USER'S MANUAL

Sequin-only Embroidery Machine

SWF/M-Series

SunStar CO., LTD.

MME-110103

1. THIS IS AN INSTRUCTION FOR SAFE USE OF SWF AUTOMATIC EMBROIDERY MACHINES. READ THOROUGHLY BEFORE USE.

2. CONTENTS IN THIS INSTRUCTION MAY CHANGE, WITHOUT PRIOR NOTICE, FOR IMPROVEMENT OF MACHINE QUALITY AND THUS MAY NOT CORRESPOND TO THE MACHINE YOU PURCHASED. CONTACT YOUR SALES AGENT FOR INQUIRIES.

3. THIS IS DESIGNED AND MANUFACTURED AS AN INDUSTRIAL MACHINE. IT SHOULD NOT BE USED FOR OTHER THAN INDUSTRIAL PURPOSE.

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CHAPTER 1

SAFETY RULES

The following set of safety rules categorized as DANGER, WARNING, and CAUTION indicates possibilities of physical or property damages if not fully observed.

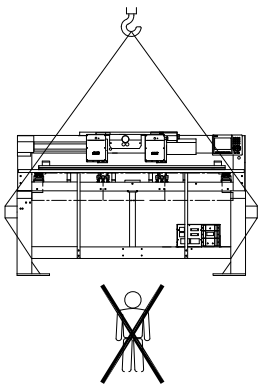
DANGER : These safety instructions MUST be observed to be safe from danger when installing, delivering, or repairing the machine.

WARNING : These safety instructions MUST be observed to be safe from machine injuries.

CAUTION : These safety instructions MUST be observed to prevent predictable machine errors.

1-1) DELIVERY OF YOUR MACHINE

DANGER

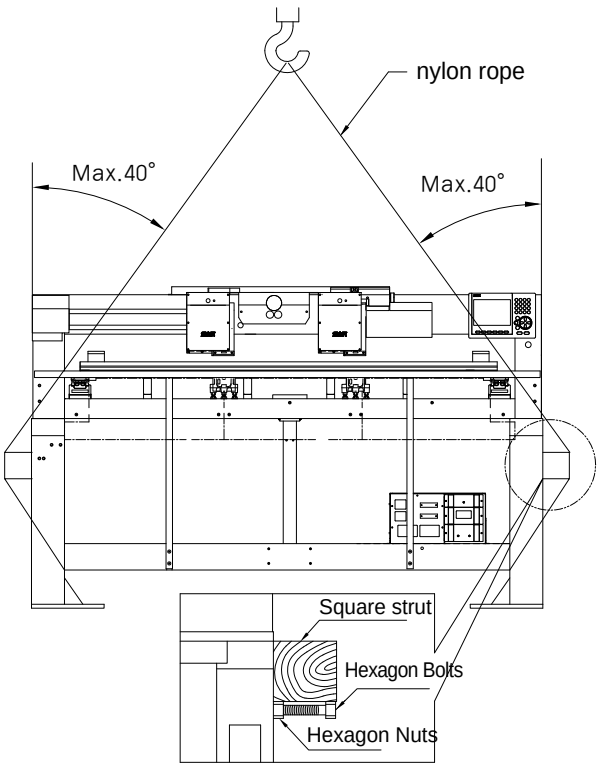


※ Make sure all persons and obstacles are out of the way of the moving equipment.

ONLY TRAINED AND EXPERIENCED PERSONS, FAMILIAR WITH THE RELEVANT SAFETY INSTRUCTIONS, SHOULD HANDLE THE MACHINE. MAKE SURE TO FULLY OBSERVE THE FOLLOWING INSTRUCTIONS.

1) **Using a crane**

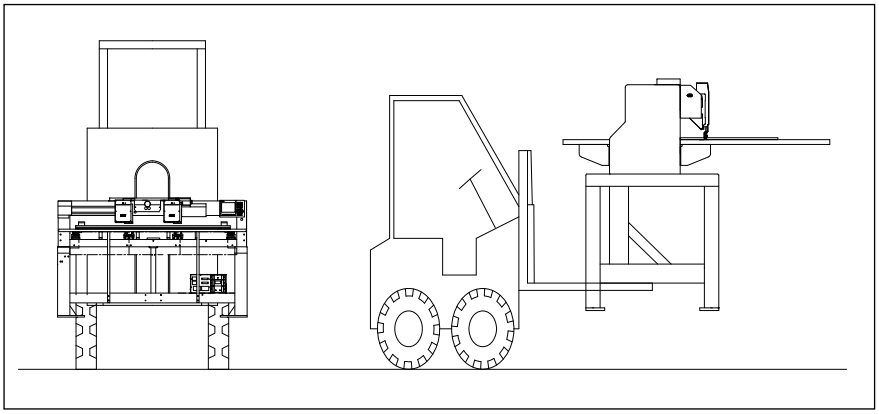
Make sure that the crane is large enough to hold the machine. Use a nylon rope of sufficient strength. Place a wooden block at either side of the machine before tying the rope. The angle should be 40°Δ or less. Make sure that the rope does not touch the table.



[Fig.1-1]

2) **Using a Forklift**

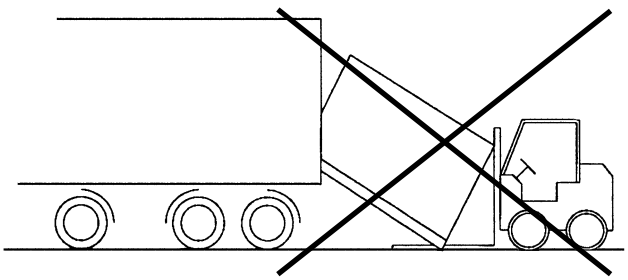
Make sure that size and weight of the forklift is sufficient to support the machine. Use the pallet to place the machine so that its center is on the forklift arm (see [Fig.1-2]). Lift the machine carefully so that the machine does not tilt to either side.



[Fig.1-2]

[WARNING]

Make sure to maintain the weight balance in machine deliveries, especially when unloading the machine from a forklift or crane, in order to prevent injury or machine damages.



1-2) INSTALLATION

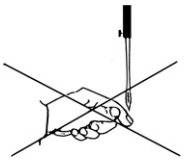
CAUTION

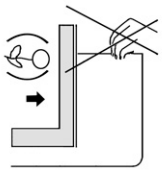
Installation environment may incur machine malfunction or breakdown. Make sure to meet the following conditions.

1) The foundation under the machine, i.e. table or desk, must be strong enough to support the weight of the machine (approximately 1 ton).
2) Air conditioning can eliminate dust and humidity that can cause pollution and corrosion of the machine. Make sure your machine is regularly cleaned.
3) Long exposure to direct sunlight can cause the paint of the machine to fade or change of the machine shape.
4) Allow at least 50cm (20 inches) of space on each side of the machine for convenient maintenance.

※ Please refer to 2. Machine Installation and Assembly for installation details.

1-3) MACHINE OPERATION





The SWF Automatic Embroidery Machine is designed for applying embroidery to fabric and other similar materials.

Pay careful attention to the WARNING and CAUTION stickers on certain parts of the machine. Make sure to observe the following when operating the machine:

1) Read thoroughly and fully understand the manual before operating the machine.
2) Dress for safety. Long and unbound hair, jewelry such as necklaces, bracelets, and wide sleeves can get caught in the machine. Wear shoes with non-slip soles.
3) Clear all persons from the machine before turning on the power.
4) Keep your hands or head away from the moving parts of the machine such as needle, hook, take-up lever, and pulley when the machine is in operation.
5) Do not remove the safety cover on the pulley or shaft when the machine is in operation.
6) Be sure the main power is turned off and the power switch is set to OFF before opening the cover of any electrical component or control box.
7) Be sure the main switch is OFF before manually turning the main shaft.
8) Turn the machine off when threading needles or inspecting the finished embroidery.
9) Do not lean against the cradle or place your fingers near the guide grooves of the frame.
10) The machine noise may exceed 85db when it is run at a maximum speed. It is not higher than the standard level, but you may need earplugs or sound-proof facilities for the operator and other workers.

1-4) REPAIR

Only SWF-trained and selected repair engineers should do repair work.

1) Turn OFF the power before cleaning or repairing the machine. Wait for 4 minutes so the machine electricity is completely discharged.

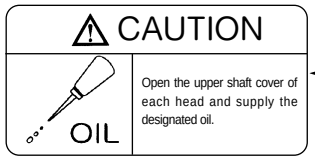
[CAUTION]
It takes about 10 minutes after turning off the main switch before the electricity is fully discharged from X/Y main shafts and the drive box.

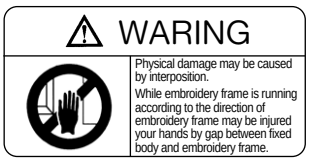
2) Do not change the settings or any parts on the machine without confirmation from SWF. Such change may cause safety accidents.
3) Use only SWF parts when repairing your machine.
4) Replace all safety covers when you are finished with your repair.

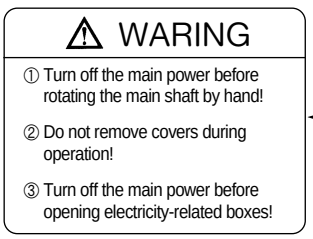
1-5) Placement of Warning Stickers

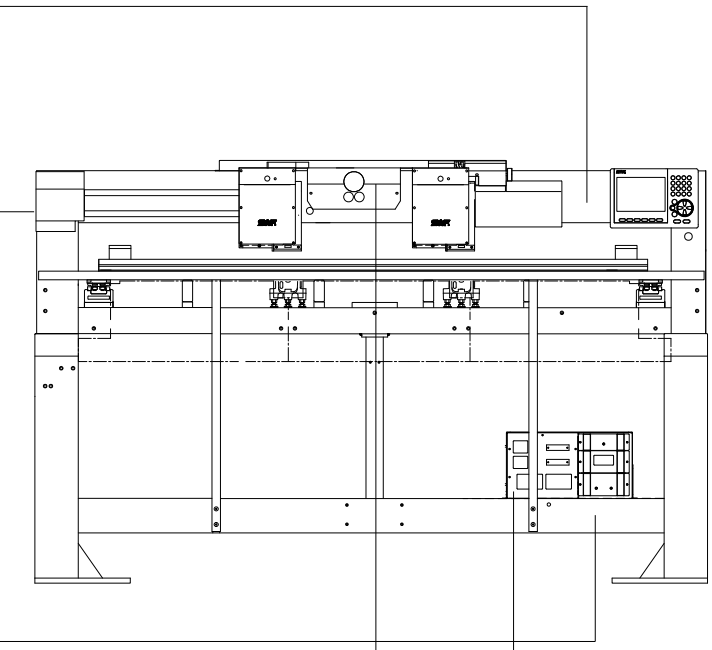
Observe the directions on ALL warning stickers placed on the machine as reminders for your safety.

1) Location of Warning Stickers

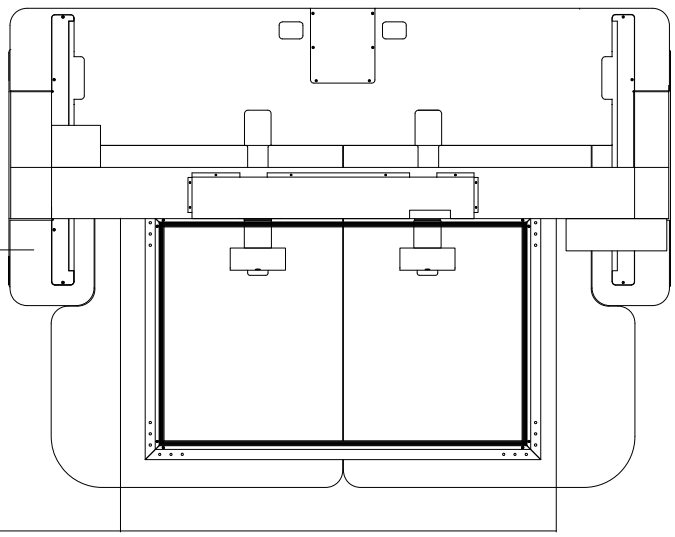








[Fig.1-3 Front]



[Fig.1-4 From top]

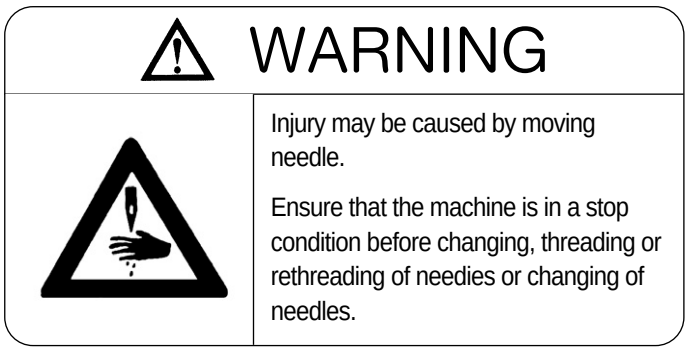
1-6) Contents of Warning Stickers

1) Warning

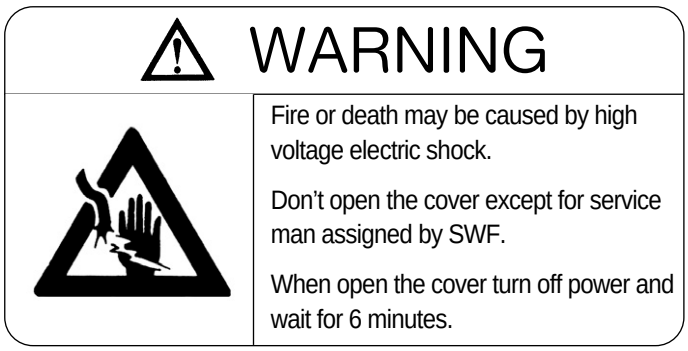
ⓐ

[Notice]
"Safety cover" in the 'WARNING' refers to all covers near the operating parts of the machine.

ⓑ



ⓒ



CHAPTER 2

INSTALLATION AND MACHINE ASSEMBLY

Install your machine in an appropriate environment and with adequate electrical supply. Failure to follow the directions may result in machine malfunction.

2-1) ENVIRONMENT

1) Temperature: ① 0～40°C (32～104°F) when the machine is in operation
   ② －25～55°C (－13～131°F) when the machine is not in operation
2) Humidity: 45～90% (relative)

[CAUTION]
① Do not let moisture drops on the machine.
② Provide air conditioning to control humidity and to prevent dust and corrosion.

3) Grounding: Ensure the electricity is properly grounded.

Properly ground the machine to avoid the possibility of electric shock. Use three-wire grounding (grounding resistance below 100 ohms).

4) Close any doors and windows near the machine to prevent direct light, dust, and humidity.
5) Foundation under the machine must be a sufficiently strong and flat concrete to support the weight of the machine.

2-2) ELECTRICITY INSTALLATION

Check if the input voltage of the machine is in the right range of the voltage supply before installing or operating the machine. The voltage required is as follows:

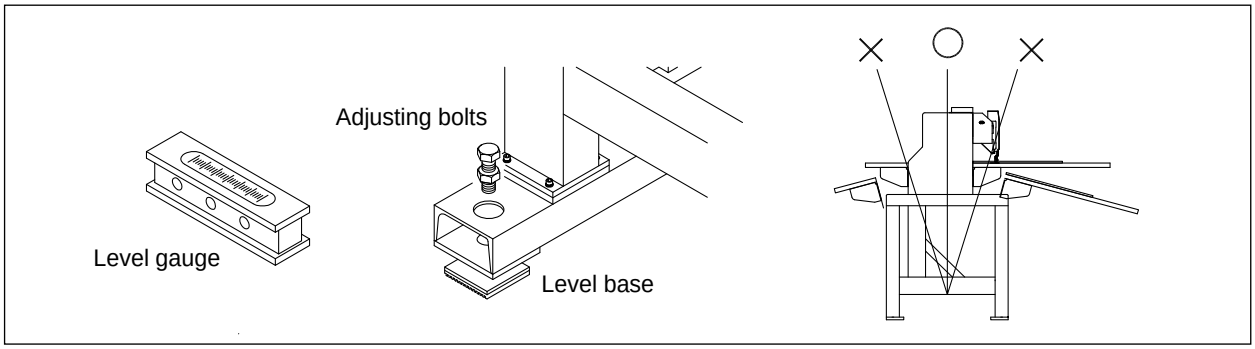
1) Input voltage (to be adjusted when installing): 110V, 220V
2) Allowed range of voltage: within ±10% of the voltage set
3) Electric capacity and voltage consumption: 640VA 440W
4) Insulation resistance: over 10M ohms (measured with 500V insulation tester)

① Check the voltage supply where the machine will be installed.
② Install the cable away from the operator's work space to prevent accident or injury.

2-3) LEVELING THE MACHINE

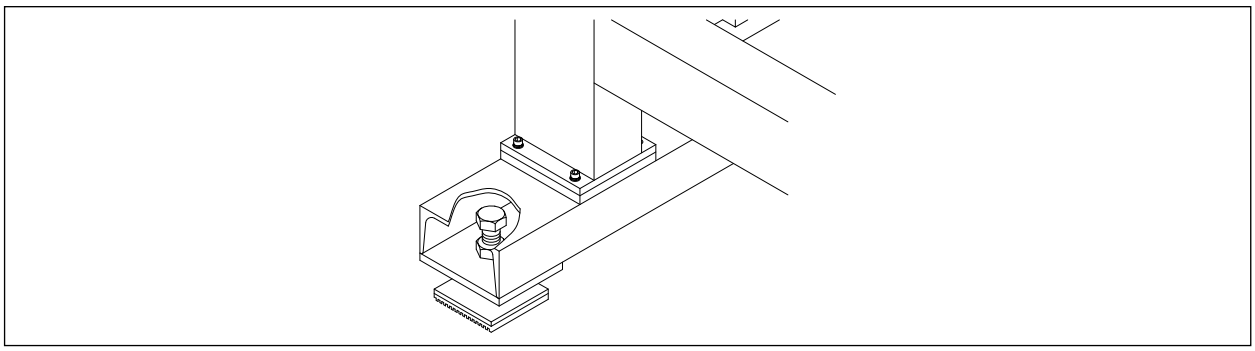
The machine must be accurately leveled (especially front and back) to prevent the needle from moving out of position.

1) Use the adjusting bolts installed at the four stands to level the machine (front, rear, left, and right). Use a level gauge.
   ① Check the voltage supply where the machine will be installed.
   ② Install the cable away from the operator's work space to prevent accident or injury.
   ③ If the difference in heights of the four bolts is over 10mm, place spacers beneath the lower adjusting bolts to make the heights even.



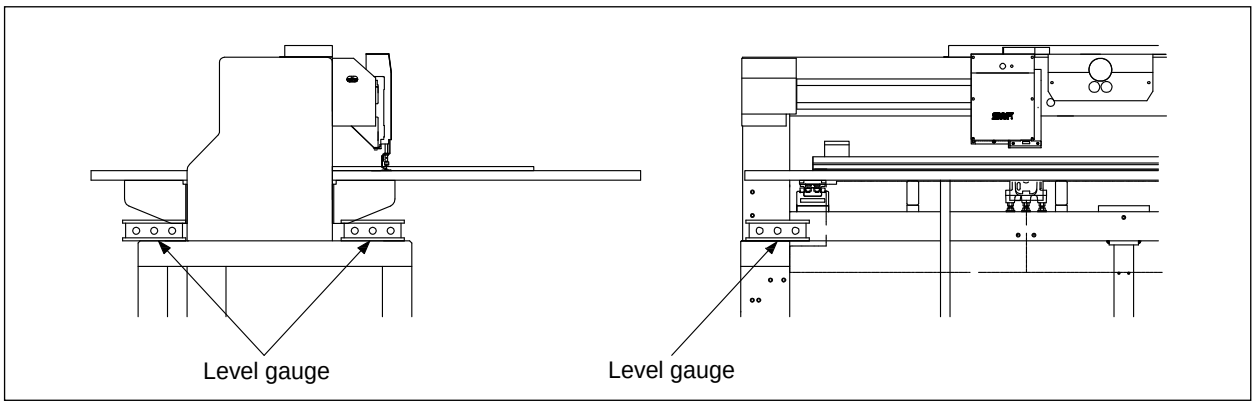
[Fig.2-1]

2) The machine must be horizontally balanced on all four sides - front, rear, right, and left.



[Fig.2-2]

3) Using the level gauge
   Use a nut to fully fasten the adjusting bolts when the machine is leveled.

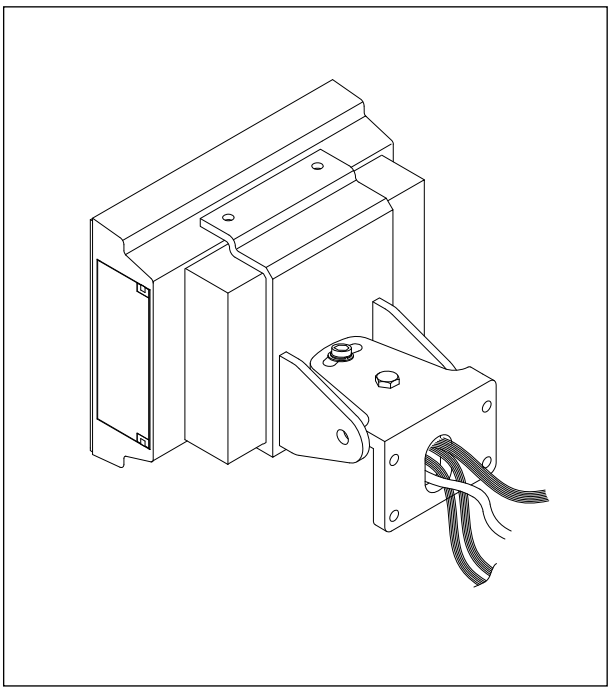


[Fig.2-3]

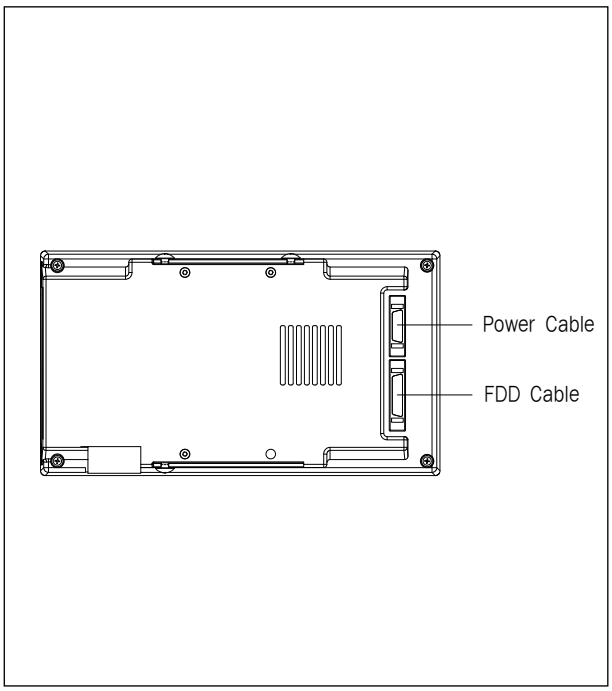
[CAUTION]
The level gauge does not measure accurately on a square pipe or a table.

2-4) ASSEMBLY OF PERIPHERAL DEVICES

1) Assembling Operation Box



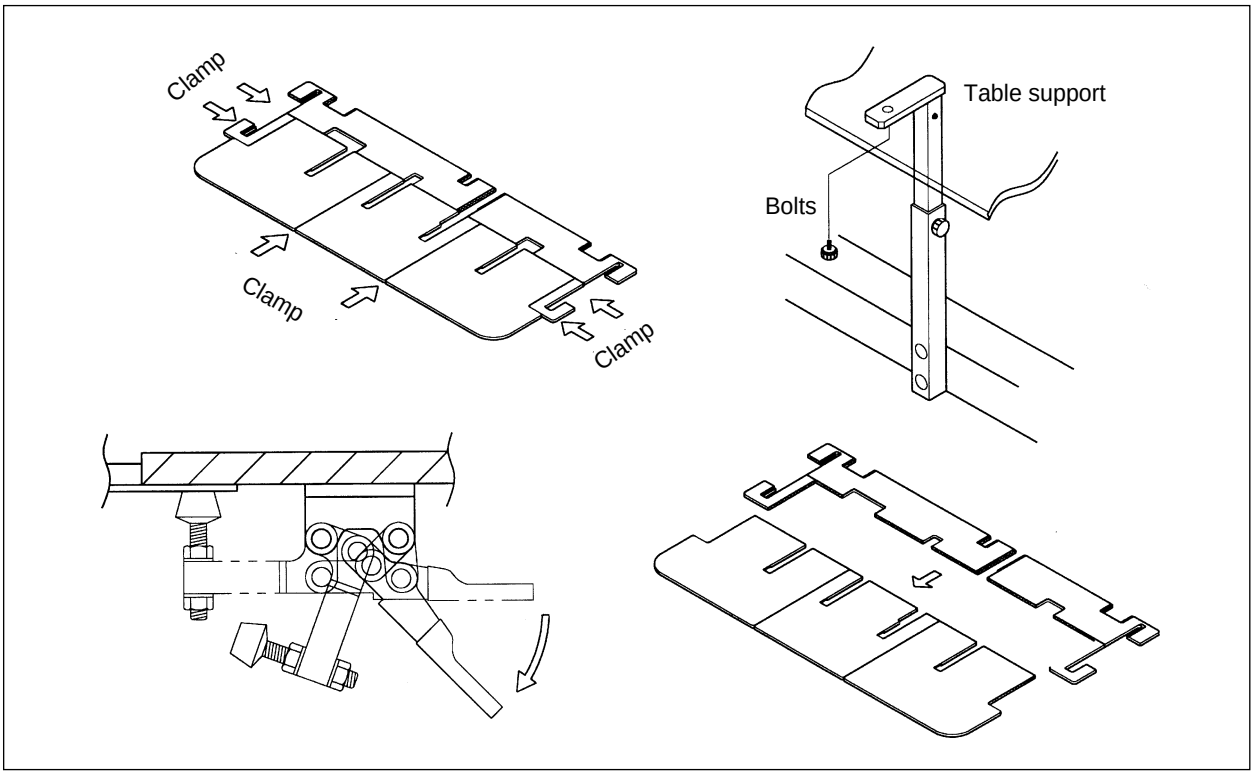
[Fig.2-4]



[Fig.2-5]

2-5) TABLE ASSEMBLY

1) Unscrew the eight clamps underneath the table and the bolts to disassemble the table.



[Fig.2-6]

2) Adjust the table support at an appropriate height and fasten the bolts.

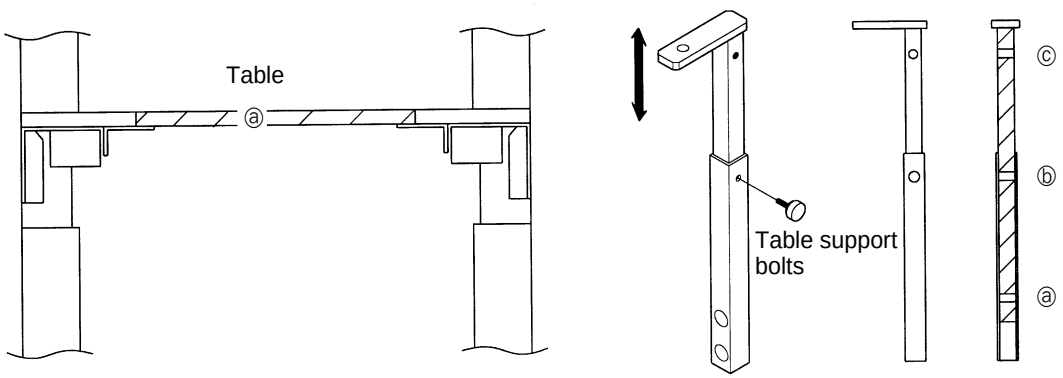
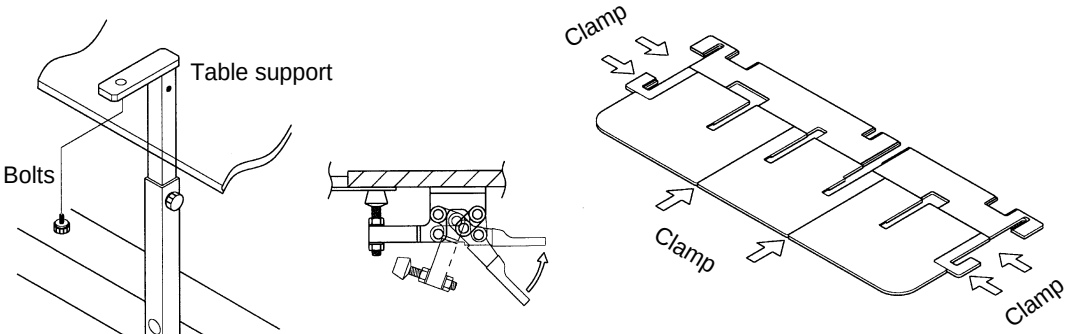


Table height	ⓐ
Work type	board

[Fig.2-7]

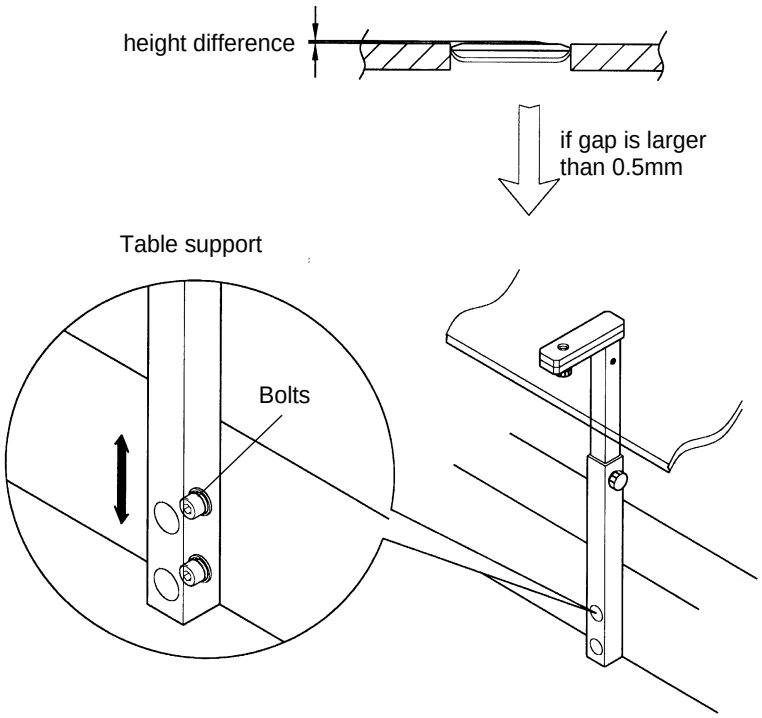
3) Insert the table and fasten the bolts and the clamps.



[Fig.2-8]

[CAUTION]

The table should not be higher than the upper side of the needle plate by 0.5mm for board frame work. If the height difference is over 0.5mm, unfasten the table support bolts, adjust the height, and fasten the bolts back.

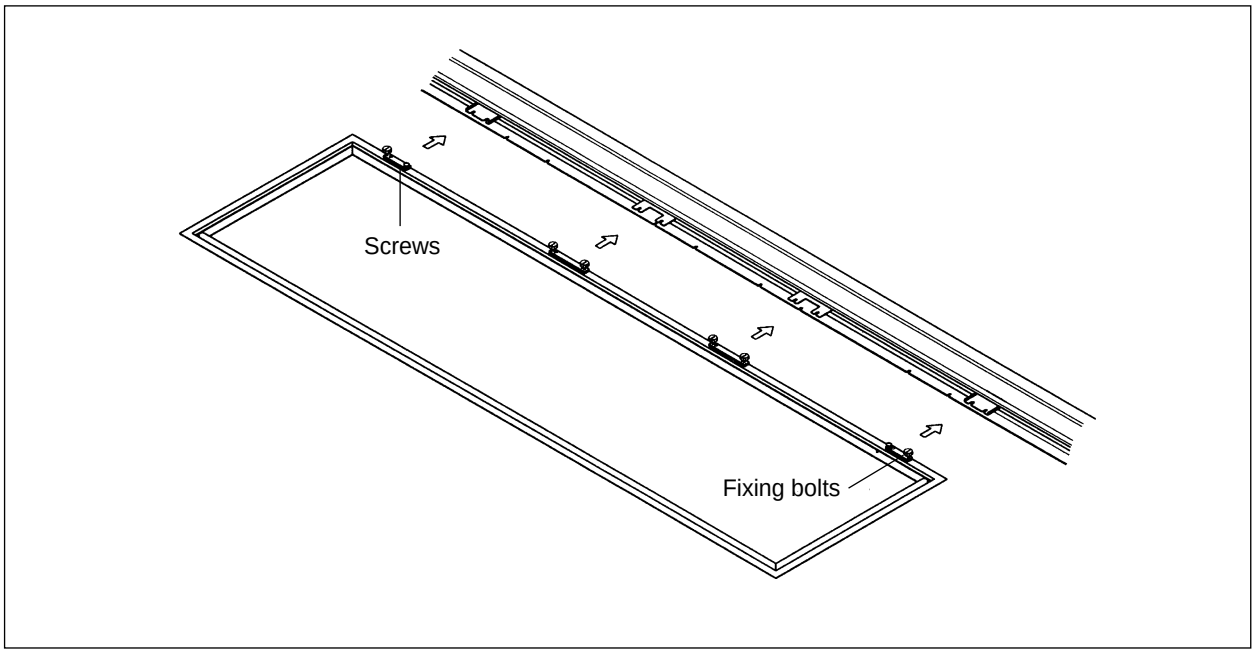


[Fig.2-10]

2-6) FRAME ASSEMBLY

2-6-1) Border Frame

1) Unfasten screws on the border frame 2/3 and install the border frame in the groove of the X frame connection plate. Fasten the bolt.

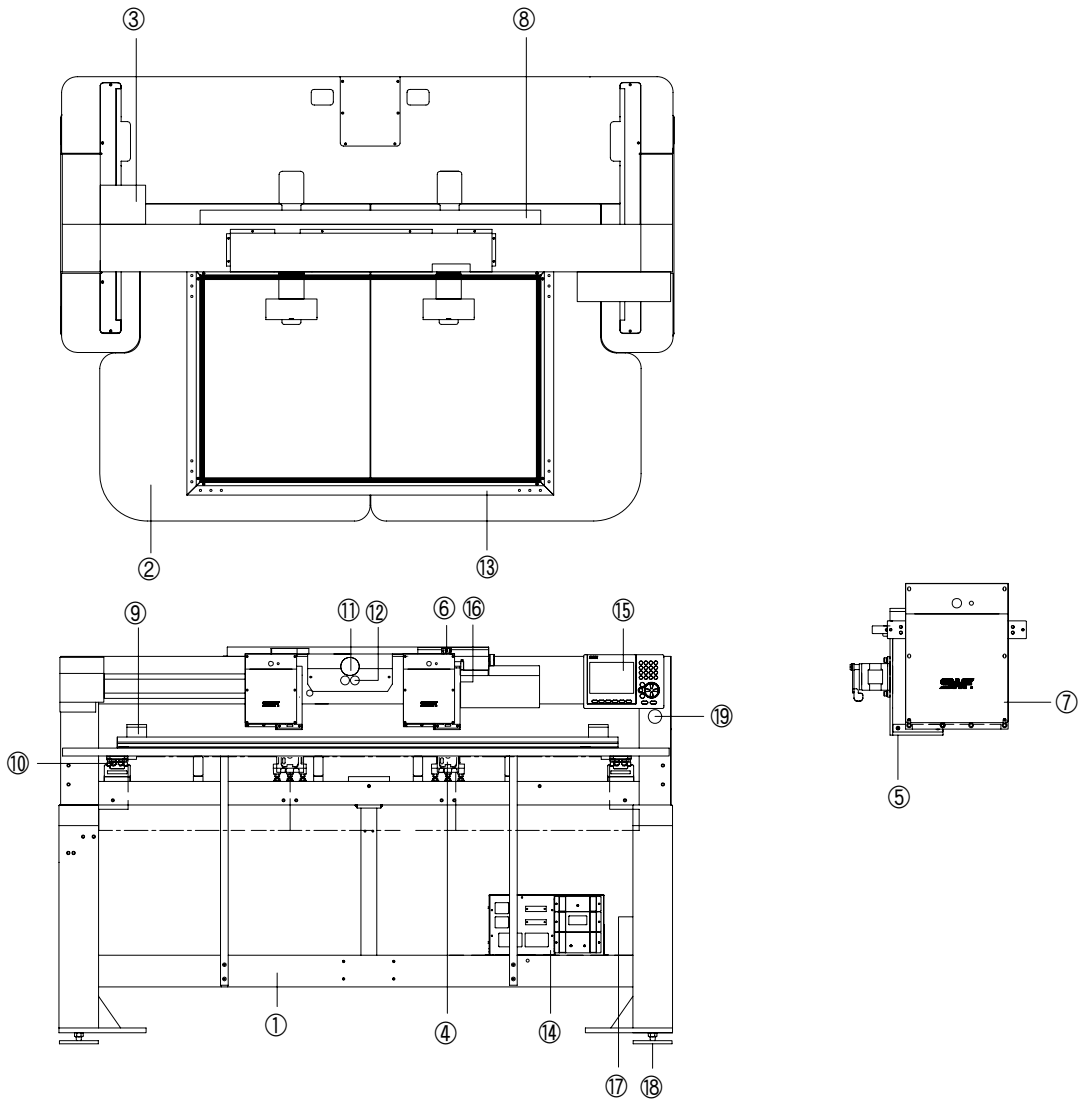


[Fig.2-11]

CHAPTER 3

PARTS OF THE MACHINE

3-1) SWF/E-U SERIES



[Fig.3-1]

① Machine Body	⑧ Sub-controller	⑮ Operation box
② Table	⑨ X-axis driving system	⑯ Encoder
③ Main shaft drive motor	⑩ Y-axis driving system	⑰ Main power switch
④ Bed	⑪ Emergency stop	⑱ Leveling base
⑤ Arm	⑫ S/B button	⑲ Emergency power
⑥ Color Change	⑬ Border frame	
⑦ Head	⑭ Controller box	

CHAPTER 4

FUNCTIONS AND FEATURES

1) EXPANDED MEMORY SIZE
The machine can store a maximum of 100 designs. The basic memory size is 4 million stitches.

2) MIRROR IMAGE CONVERSION AND DESIGN DIRECTION
You can turn the design from 0° to 359° in the increments of 1° and also reverse the design in the X direction (mirror image).

3) ENLARGING AND REDUCING DESIGN
You can reduce or enlarge the embroidery design in size from 50% to 200% by 1% along the X and Y axis.

4) AUTOMATIC SELECTION OF NEEDLE BAR
You can select the order of the needle bars up to the 300th bar.

5) GENERAL REPETITION WORK
The same design can be repeated up to 99 times along the X and Y axis.

6) AUTOMATIC OFFSET
The frame automatically returns to the offset point when the embroidery is finished to make it easier for you to switch the frames. You can select AUTOMATIC OFFSET at PARAMETER SELECT MODE to move the frame automatically to the desired point, making it easier to do appliques and to switch the frames.

7) MANUAL OFFSET
You can manually move the frame to the pre-selected point to do appliques or change the frames during embroidery work. The frame can be moved back to its original place by simply pressing the right buttons.

8) RETURN TO START
The frame can be moved back to the start point of the design during the embroidery work.

9) NON-STITCHING
The frame and the needle bar can move back and forth by the units of 1, 100, 1000, and 10000 stitches and by color without stitching.

10) FRAME REVERSAL
When the thread breaks or runs out of track, you can move the needle bar back to the starting point of the design in the units of one to ten stitches.

11) AUTOMATIC RETURN TO STOP POINT IN UNEXPECTED BLACKOUT
When the power fails unexpectedly, the frame moves back to the exact point where the stitching stopped. This helps reduce the number of defects.

12) 3.5" FLOPPY DRIVE (EMBEDDED)

A 3.5" floppy drive is embedded in the operation panel for you to read or store designs. Both 2DD and 2HD disks can be used.

13) EDITING

You can delete, change, or insert stitch data and function codes (jump, finish, trimming).

14) AUTOMATIC STORAGE OF DESIGN SET-UP

The machine automatically stores "basic set-up" for each design and calls the set-ups when a specific design is called. This reduces your preparation time.

15) INDIVIDUAL HEAD OPERATION

You can work on the specific head with a broken thread.

16) MACHINE STOPPAGE

The screen will indicate why the machine has stopped.

17) RPM

The screen indicates rpm.

18) FRAME SPEED SET-UP

You can adjust the frame speed to high, medium, or low.

19) UNUSED MEMORY

The screen indicates the memory available for use.

20) TAPE CODE COMPATIBILITY

2-binary and 3-binary tape codes can be edited.

21) CODES FROM OTHER BRANDS

The machine can automatically read designs of various formats stored in the floppy disk. These formats include SST/ DST, DSB, DSZ/ TAP/ FMC, FDR/ ZSK/ 10O/ EXP.

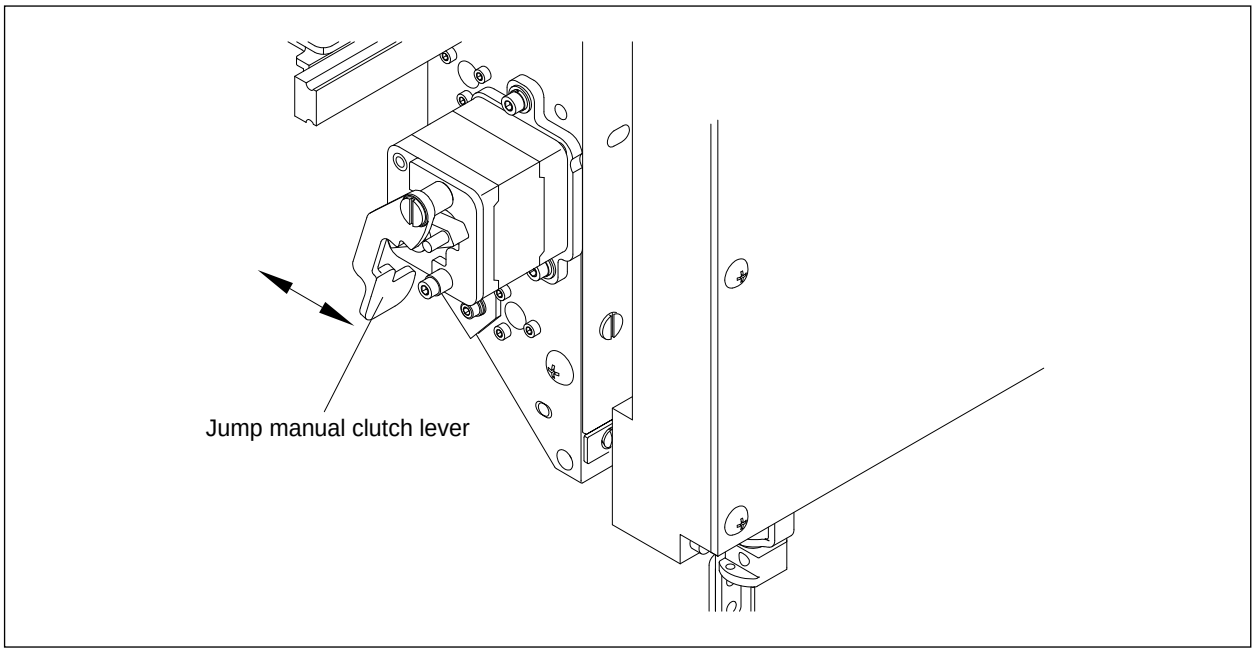
[Identifiable Format]			
1. SST	2. DST, DSB, DSZ		3. TAP
4. FMC, FDR	5. ZSK	6.10O	7. EXP

CHAPTER 5

FUNCTIONS FOR BASIC MACHINE OPERATION

5-1) NEEDLE STOP CLUTCH

As illustrated in [Fig.5-1], the needle bar will not move when you pull the jump clutch lever. Push the level to the opposite direction of the operator to do move needle bar up and down.



[Fig.5-1]

CAUTION

① The trimmer and the take-up lever continue to move even when the needle bar is stopped by the clutch. Avoid any operations, i.e. threading the needle or changing thread.
② Long-time operation of the needle bar with the clutch may damage the bar controller.

5-2) Precautions in using floppy disks or USB memory sticks

Make sure to meet the following conditions when using the above devices.

CAUTION

1) You can use pre-formatted disks, but be sure to use disks of recognized quality.
2) You can use USB memory sticks of FAT 16 (file system). The machine does not accommodate FAT 32.

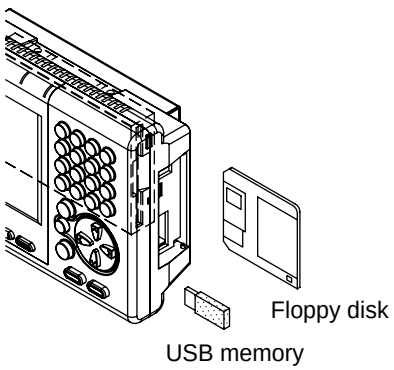
▶ When using floppy disks
- Keep the disks away from objects with magnetic fields, i.e. televisions, radios.
- Protect the disks from excess heat, humidity, and direct sunlight.
- Do not place heavy objects on the disks.
- Do not remove the disk from the drive while formatting, reading, or writing the disk.
- Do not open the cover of the disk drive.
- Data cannot be written onto the write-protected disks.
- Repetitious reading and writing on a single disk may cause errors.
- Save your important data on more than one disk for back up.

▶ When using USB memory sticks
- Do not delete USB memory from the USB port when reading and writing with USB.

5-3) Inserting floppy disks and USB memory sticks

- Inserting floppy disks
  Insert the disk in the indicated direction.

- Inserting USB memory sticks
  Insert the USB memory into the USB port.



[Fig.5-2]

5-4) Deleting floppy disks and USB memory stick

– To take out the disk from the floppy drive, press the OUT button.
– For USB, close the input/output window and delete the USB memory.

Be careful not to remove the floppy disk from the drive when formatting, reading, or writing in order to prevent loss of data.

5-5) Reading and writing of embroidery designs

You can use external devices, such as floppy disks, USB memory, CF cards, and serial port to read designs into the operation box. For writing the designs onto floppy disks and USB memory sticks are available.

5-6) RETURN TO PREVIOUS LOCATION IN UNEXPECTED BLACKOUTS

Your SWF machine goes back to the location of stop to pick up stitching when the power comes back on after unexpected blackouts.

[CAUTION]
Make sure to turn OFF the power in unexpected blackouts until the power comes back on.

CHAPTER 6

MAINTENANCE AND INSPECTION

Consumable parts shall not be guaranteed even in warranty period.

6-1) CHECK POINTS FOR REGULAR INSPECTION

Safety rules must be observed during the inspection.

① Clean, oil, and grease the set parts of the machine on a regular basis.
② Inspect tension of each driver belt.
③ Failure to perform regular inspections may cause the following:

- Corrosion of P/C circuit board
- Damage to the semi-conductor on P/C circuit board
- Malfunction of the floppy disk drive
- Ill connection of the connector
- Abnormal wear-out of machine parts due to insufficient oiling and greasing

6-2) OIL SUPPLY

Make sure to turn the power OFF during oil supply.

Sun Star is not responsible for machine damages or wear-outs caused by insufficient oiling.

1) Oil supply

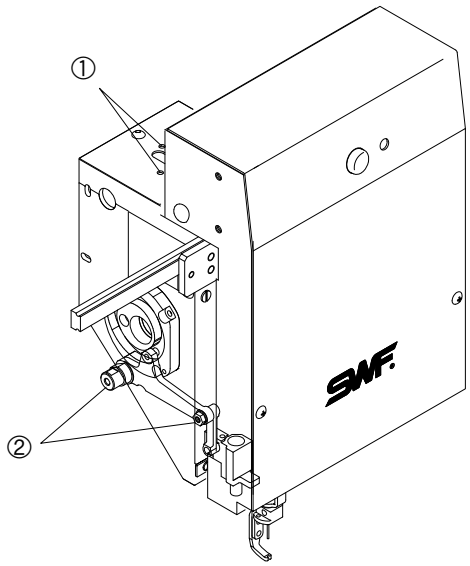
Use the SWF sewing machine oil (Spindle Oil) or ISO-standard VG18.

2) Manual oil supply

No.	Where to Oil	Oiling cycle	Ref. Fig.
1	Needle bar and needle bar shaft	Once a week	①
2	Inside the arm	Once a week	②

[CAUTION]

1. Excess oil may stain the thread and the fabric.
2. Run the machine without stitching for 2-3 minutes after oiling.
3. Excessive oiling in the hook may cause trimming problems and thread breaks.



[Fig.6-1]

3) Lubrication

① Grease supply

CAUTION	Make sure to turn OFF the main power during the grease supply.

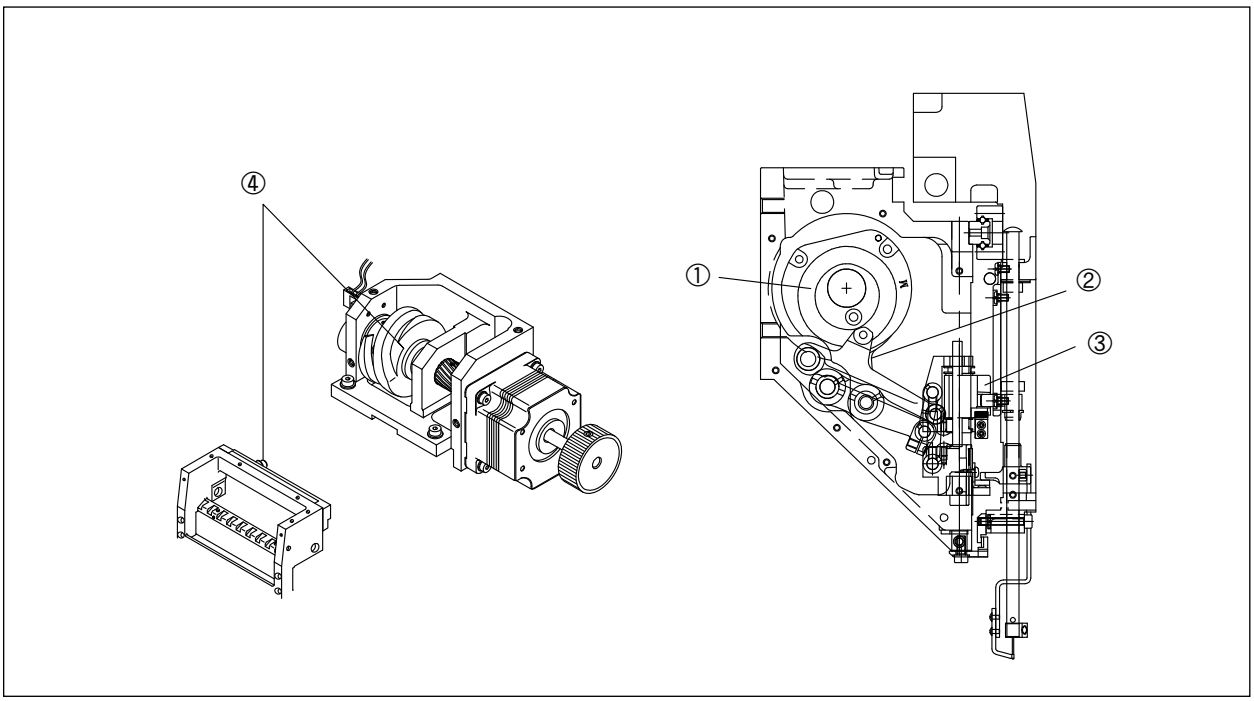
Use high-quality mineral-based lithium grease.

NO	Where to Grease	Greasing cycle	Reference Fig.
1	Inside the arm Presser Foot drive cam Needle bar drive cam Needle bar controller	Once in 3 months	① ② ③

Places for supplying synthetic TM grease

NO	Where to Grease	Greasing cycle	Reference Fig.
1	Color change cam, color change head roller	Once in 3 months	④

[CAUTION]
Regular greasing prevents machine noise and abnormal wear-out.



[Fig.6-2]

CAUTION

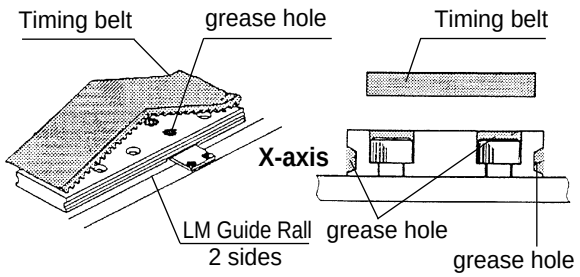
Turn OFF the main power during the grease supply.

Use lithium-type grease (JIS No.2) - Albania No.2.

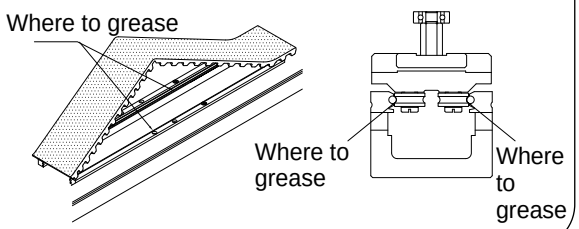
NO	Where to Grease	Greasing cycle	Reference Fig.
1	X-axis LM guide (2 on each side)	Once in 2 months	①
2	Y-axis LM guide (2 on each side)	Once in 2 months	②
3	Sub Y drive LM guide (1 on one side)	Once in 2 months	③
4	Head drive LM guide	Once in 2 months	④

[CATUION]
Do NOT grease the parts not indicated (needle bar, hook, etc.)

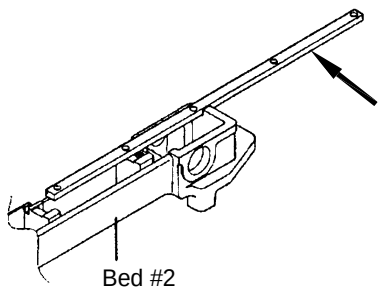
① X-axis LM guide (4 spots)



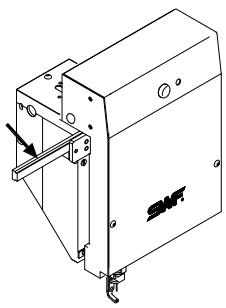
② Y-axis LM guide (4 spots)



③ Sub Y drive LM guide (1 spots)



④ Head drive LM guide (upper cover opened)



[Fig.6-3]

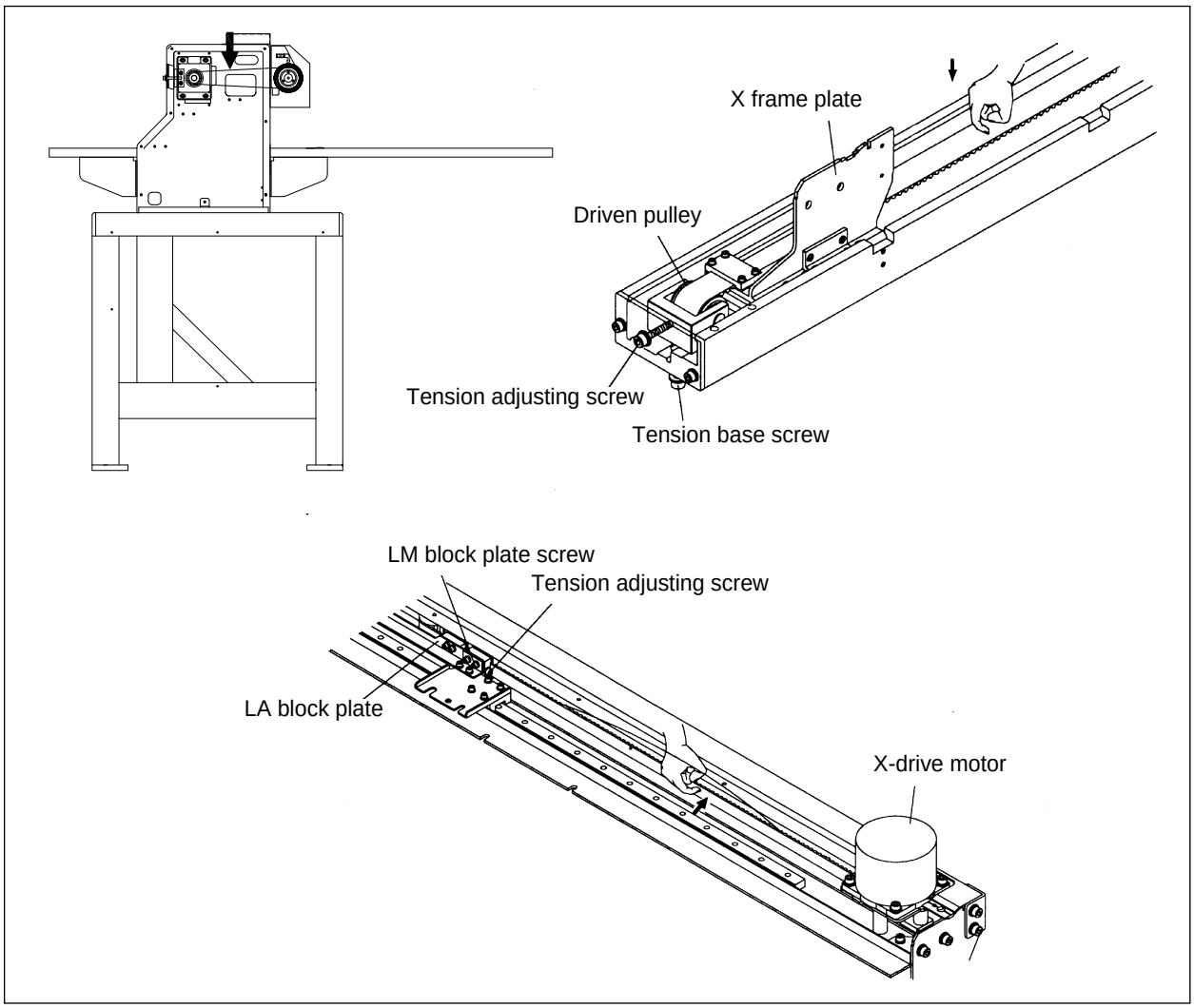
6-3) DRIVE BELT TENSION

CAUTION	Turn OFF the main power when inspecting drive belt tension.

Too weak or too tight tension on the drive belt may cause machine malfunction or damages (abnormal wear-out of drive unit). Inspect the driver belt on a regular basis.

NO	Location for inspection	Inspection cycle	Reference
1	Belt on main shaft motor	Once in 3 months	① check belt tension ② check for belt crack ③ check for belt wear-out ④ check for bearing damage ⑤ check for wear-outs of rotating & sliding parts
2	X-Y Drive Belt	Once in 3 months	
3	Others	Once in 3 months	

[CAUTION]
Inspect the tension in the direction of the arrows in the picture below.



[Fig.6-4]

CHAPTER 7

MACHINE ADJUSTMENTS

7-1) ADJUSTING LOW-NOISE PRESSER FOOT

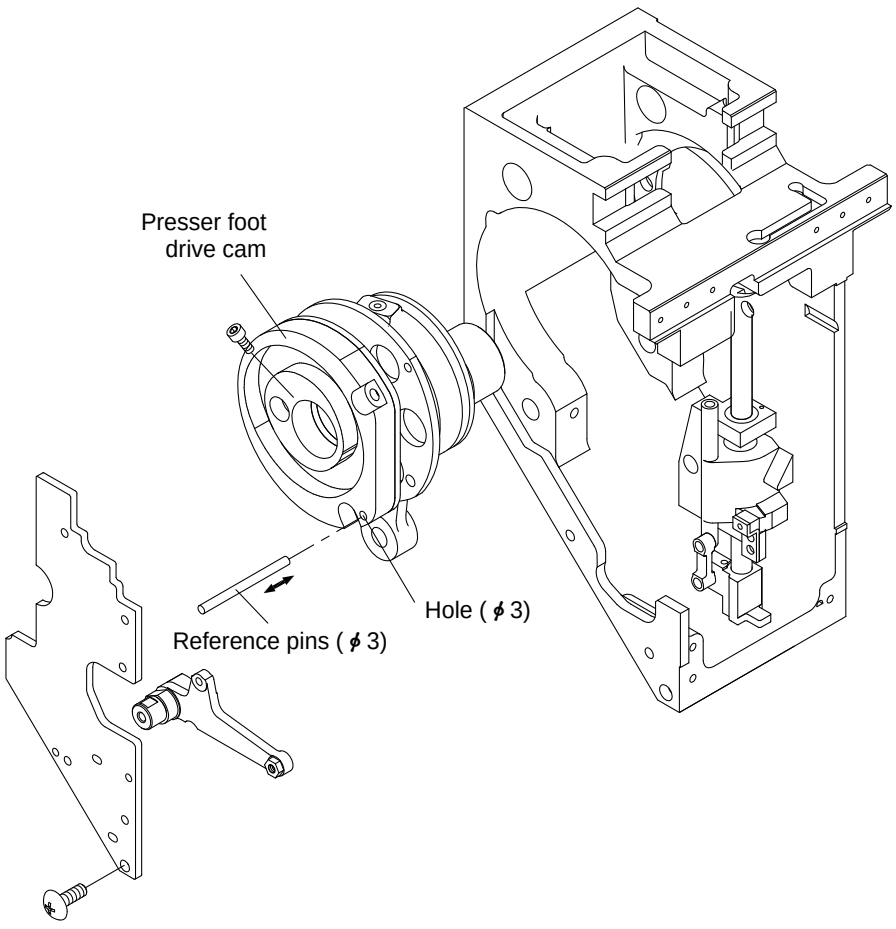
1) Assembly of Presser Foot Cam

① Set the main shaft at 178° and install two reference pins (ϕ 3) into the assembly hole of the presser foot driver cam (ϕ 3) as shown in [Fig.7-1]. Insert the pins then into the assembly hole of the take-up lever driver cam.

② Adjust the presser foot driver cam to where the reference pins freely move left and right. Fix the three screws (M4 × L8).

[CAUTION]

1. The assembly pin should smoothly move right and left with the three screws fastened.
2. The assembly unit and the assembly pin are not for commercial sale.
3. Contact your SWF dealer if you must adjust the location of the cam.



[Fig.7-1]

2) Height Adjustment of Presser Foot and Needle Bar Pin

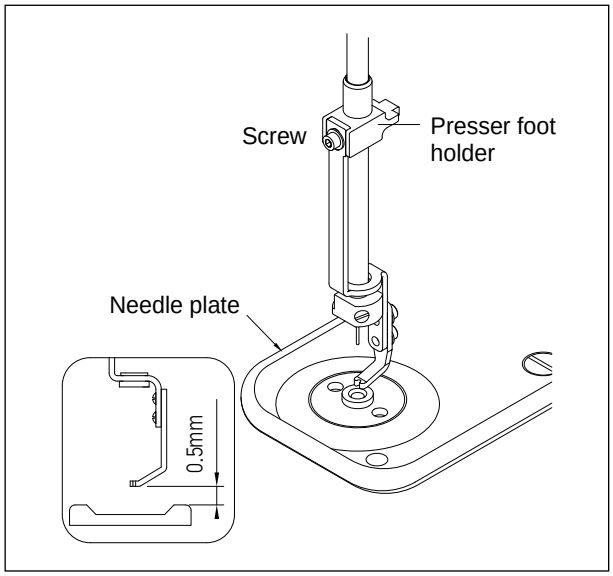
① Presser Foot

Confirm the relations of the presser foot and the needle bar pin position about the embroidery fabric by rotating a main shaft with a main shaft handle, then set the presser foot to the lowest(main shaft angle 190°) by rotating the main shaft handle. Take off a head cover like the figure and loosen a presser foot screw to move up and down. Then put a gauge of 0.5mm thick on the needle plate, press the presser foot lightly, and tighten the clamp screw solidly. (Figure 7-2)

② Needle Bar Pin

Set the needle bar to the lowest(main shaft angle 178°) by rotating the main shaft handle.

Loosen the needle clamp screw and make the needle bar pin reach to the upper face of the embroidery fabric(base fabric), then tighten the needle clamp screw. (Figure 7-3)



[Fig.7-2]

7-2) Relations between Presser Foot and Needle Bar Pin

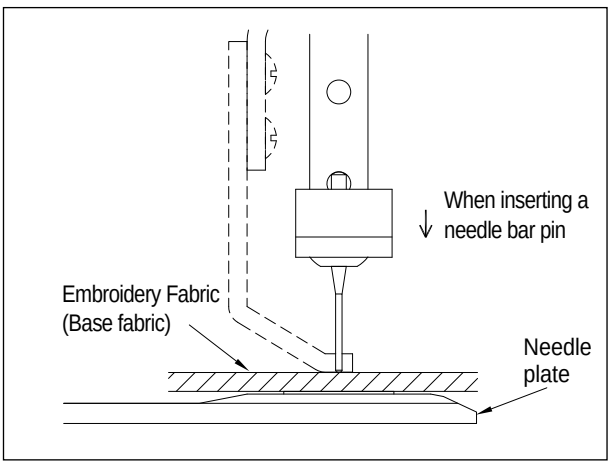
Make the presser foot press the embroidery fabric(base fabric) after the needle bar pin reaches to the embroidery fabric(base fabric) for a smooth work.

1) When the height of the presser foot is too high

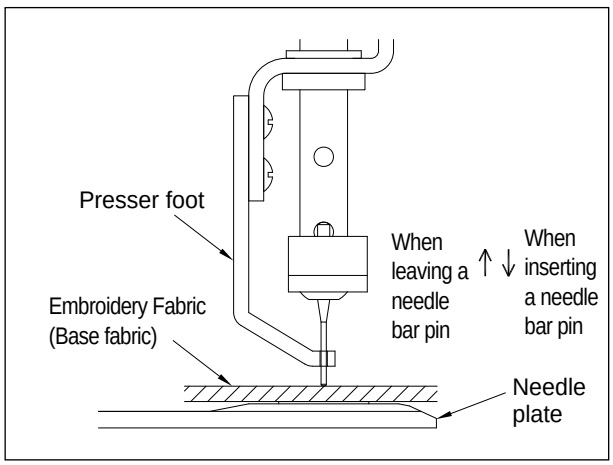
A [Figure 7-4] means a condition that the presser foot does not press the embroidery fabric(base fabric) when the needle bar pin is on the embroidery fabric(base fabric).

※ [Reference] Embroidery Fabric ① Base fabric : Use soft fabric less than 0.5~1mm

② Transfer paper(Adhesive film) : Use acrylic fabric less than 500mm wide



[Fig.7-3]



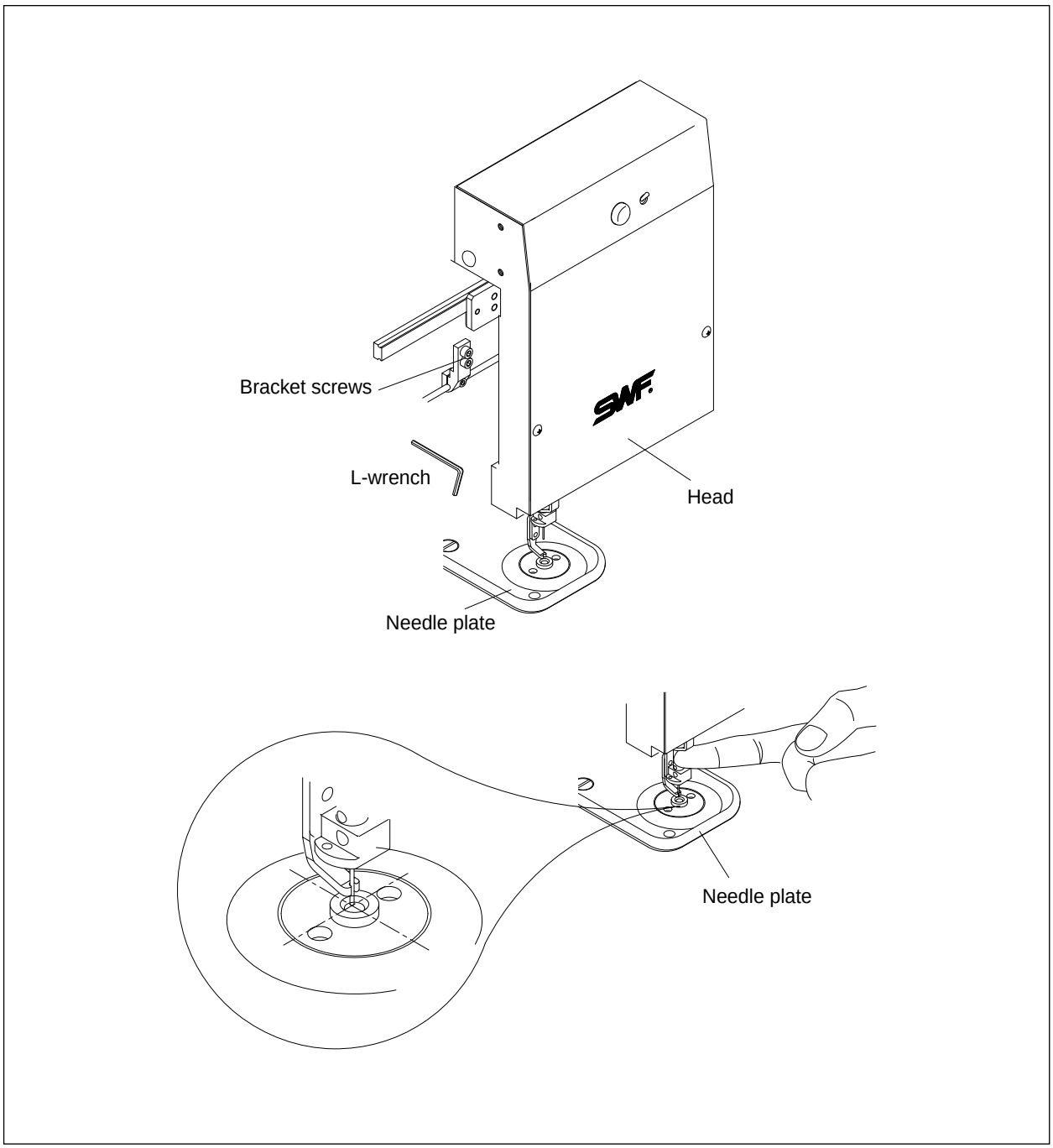
[Fig.7-4]

7-3) Needle bar pin

① Please make sure to check that the position of the needle bar pin might change when carrying machine and adjusting level. When checking the needle bar pin, first of all, check that the pin is bent. Then put the needle bar to the lowest stop position by rotating the main shaft near 178° with the main shaft handle, and ascertain that the needle bar pin is located at the center of the presser foot hole

[CAUTION]
Check the regular position of the needle bar pin at the first and the last of all heads.

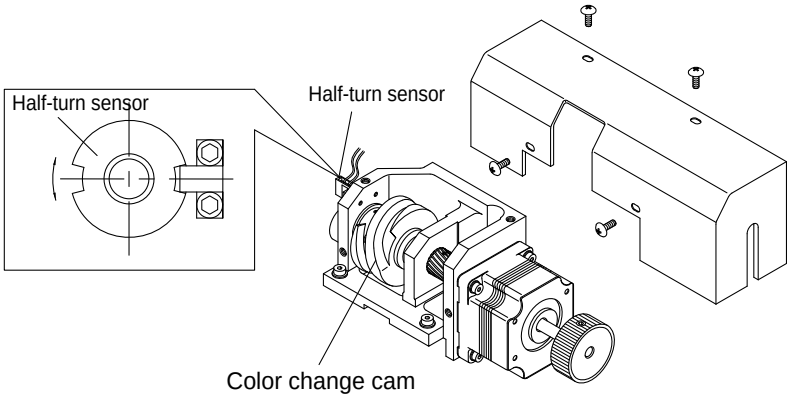
② If the needle bar pin is off the regular position, loosen the bracket clamping screws(2 parts) like a [Figure 7-5] and adjust the needle bar pin to the regular position by moving the head.



[Fig.7-5]

7-4) ADJUSTING HALF-TURN FILM FOR COLOR CHANGE

① (For automatic color change) If the needle is not at the center of the needle hole on the plate, turn the lever and adjust so that the roller is on the center of the color change cam on the straight line. Open the cover of the half-turn sensor and align the center of the half-turn sensor with the center of the film (see [Fig.7-6(a)]).



[Fig.7-6]

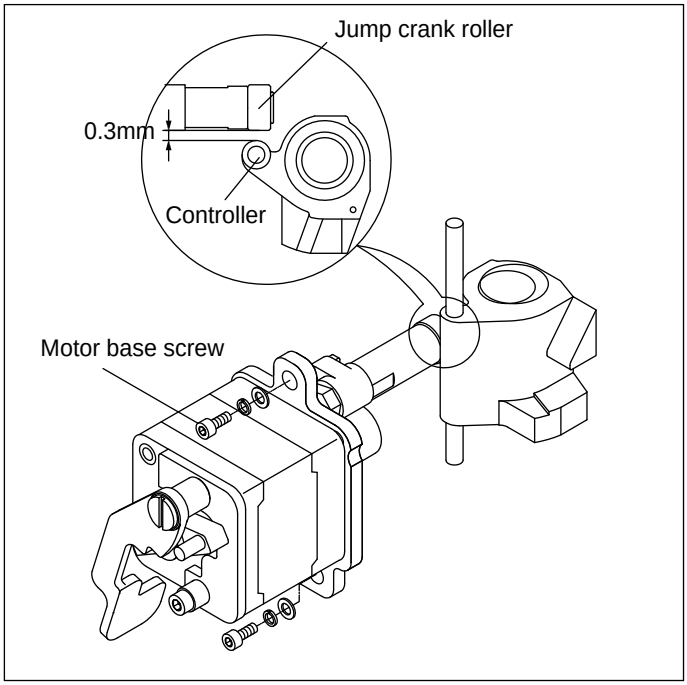
[CAUTION]

- Manual color change must be performed at the upper shaft angle of 100˚.
- Manual color change at the upper shaft angles other than 100˚ may cause damage on the controller and the take-up unit.

7-5) JUMP MOTOR ADJUSTMENT

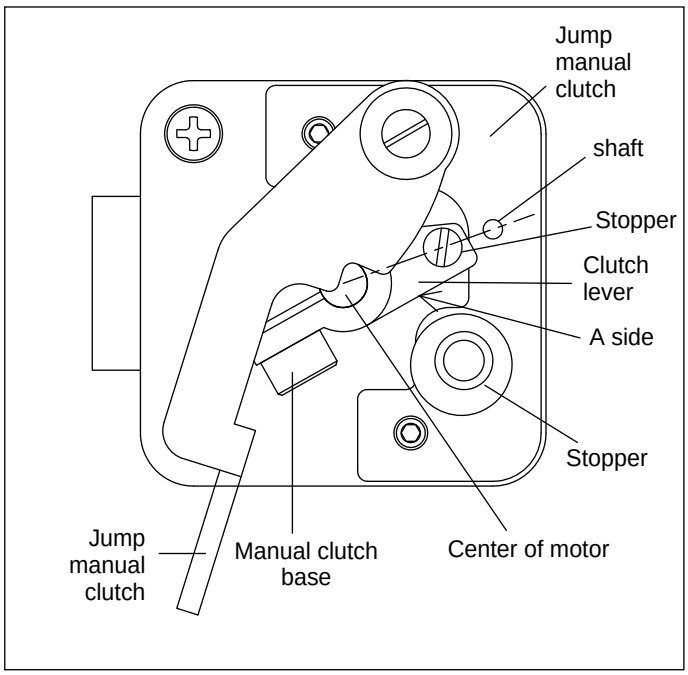
Adjustment is required for new or malfunctioning jump motor.

1) Adjusting the Standby Position (adjusting motor base)
   ① Unscrew motor base ([Fig.7-7]) and adjust so that the jump crank roller is 0.3mm away from the controller. Fasten the screw.
   ② If the gap is wider than 0.3mm, the needle may not jump well. If the gap is narrower than 0.3mm, the jump will cause noise.



[Fig.7-7]

2) Adjusting Jump Manual Clutch
   ① Jump manual clutch is used to turn the head off mechanically. If the clutch lever doesn't function properly, check the clutch assembly.
   ② First, pull the clutch lever forward and check if the carve on the clutch base is in line with the center of the clutch pin and the center of the motor shaft when in standby (see [Fig.7-8]). If not, unscrew and adjust the clutch body with the jump crank roller attached to the stopper. Fasten the screw back.
   ③ Pull the clutch lever forward and check if the clutch body and the stopper are completely attached. If not, adjust the stopper to be completely attached to the body.



[Fig.7-8]

CAUTION

1. If you will not be using the head with the head ON/OFF switch, make sure to use the jump manual clutch lever.
2. If the A side of the jump manual clutch does not touch the stopper, when you run the electric jump you will hear a noise.

7-6) ADJUSTING DRIVE BELT TENSION

7-6-1) Y-Axis Timing Belt

[CAUTION]

Specification of Drive Belt Tension Adjuster

- Model: U-305 Series Sound Wave Belt Tension Gauge - Standard
- Manufacturer: UNITTA

[CAUTION]

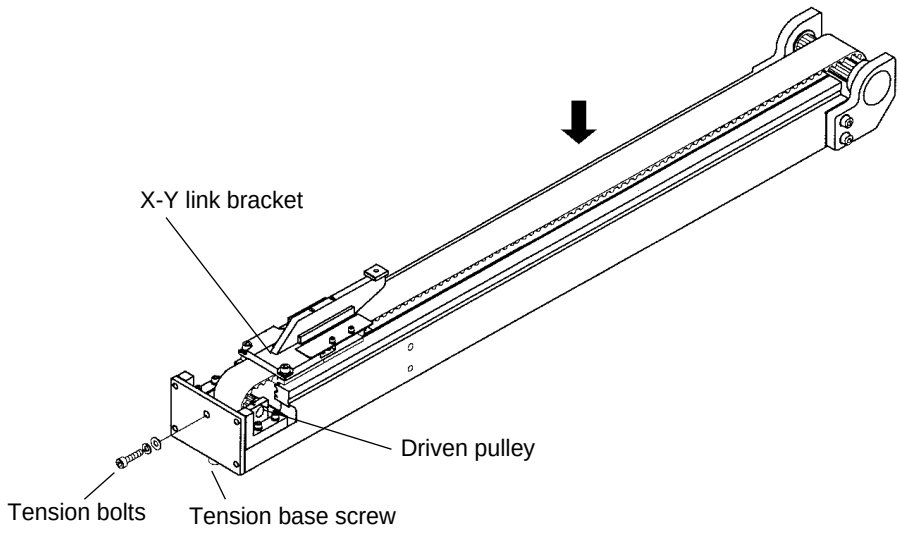
- Drive belt tension can be adjusted only by trained SWF engineers.
- Make sure to turn OFF the machine during the adjustment.

① Push the X frame plate to the driven pulley ([Fig.7-9]) and check the drive belt tension on the Y-axis. Use the sound wave tension gauge.

② In case of the Y axis timing belt tension, when flicking the center of the belt span between X-Y connection bracket end face and the drive pulley by using a finger or similar tool, please adjust the measured value of sonic belt tension meter as below.

Type	UH2, 4, 6 heads UK2, 4 heads	UK6 heads, UH8 heads (Short Span)	UK6 heads, UH8 heads (Long Span)
Measured value	40±2HZ	40±2HZ	23±2HZ

③ Unfasten the tension base screws. Turn the bolts to adjust the tension. Turn clockwise to increase and counterclockwise to decrease the tension.



[Fig.7-9]

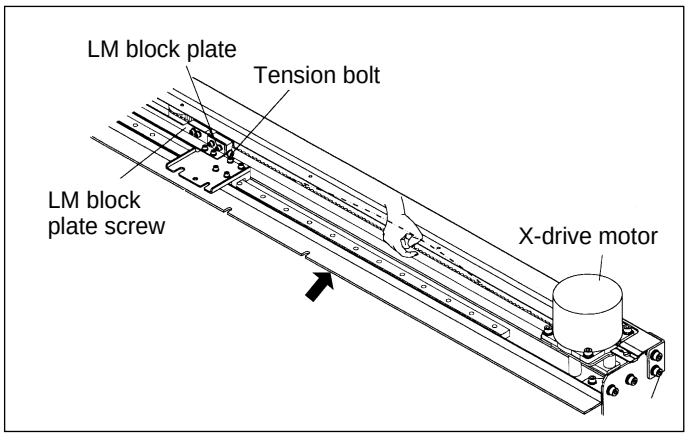
7-6-2) X-Axis Timing Belt

① Push the frame plate fully to the right ([Fig.7-10]). Check the drive belt tension on X-axis using the sound wave tension gauge.

② Tension on the X-axis timing belt should measure as below on the sound wave measurer when you pluck the middle of the belt with your finger.

Type	UH2, 4, 6 heads	UK2, 6 heads	UK4 heads	UH8 heads
Measured value	65±2HZ	59±2HZ	58±2HZ	57±2HZ

③ Unscrew LM block plate. Turn the tension bolts to adjust the tension. Turn clockwise to increase and counterclockwise to decrease the tension.



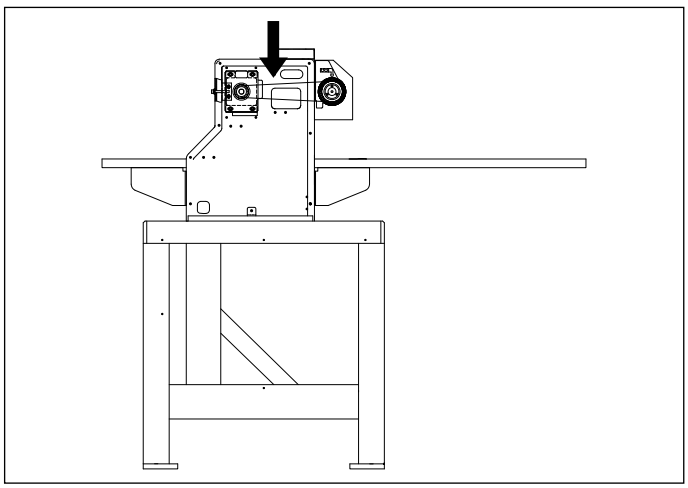
[Fig.7-10]

7-6-3) Timing Belt on Main Shaft Motor

① Tension on the timing belt of the main shaft motor should measure as below on the sound wave measurer when you pluck the middle of the belt with your finger.

Main shaft motor belt(V-belt)	94±2HZ

② Unscrew the idler and adjust it right and left to get the right tension. Turn the idler left to increase the tension and right to decrease the tension.



[Fig.7-11]

7-7) LAMP (OPTIONAL)

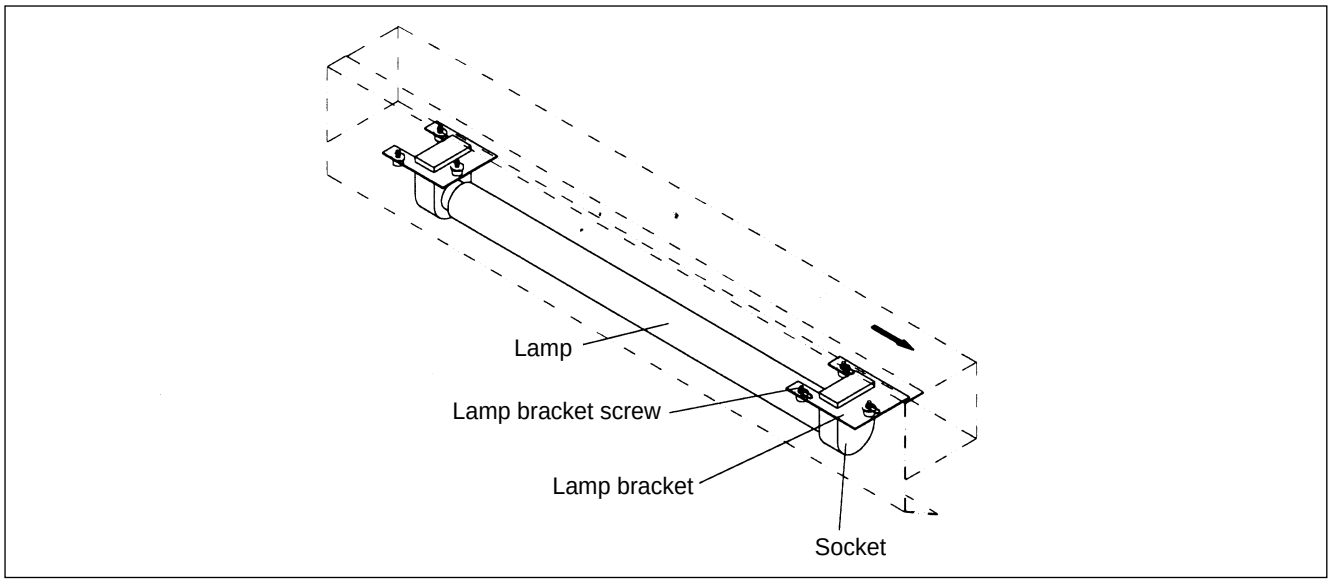
7-7-1) Lamp Socket Adjustment (4-head)

Standard lamp for SWF machines measures 580mm in length. If you have to use 590mm lamp for certain purposes, adjust the lamp in the following order.

① Unfasten the three screws on the socket.

② Push the lamp socket fully to the right of the shell.

③ Install a new lamp and adjust the socket according to the length of the lamp. Fasten the socket screws.



[Fig.7-12]

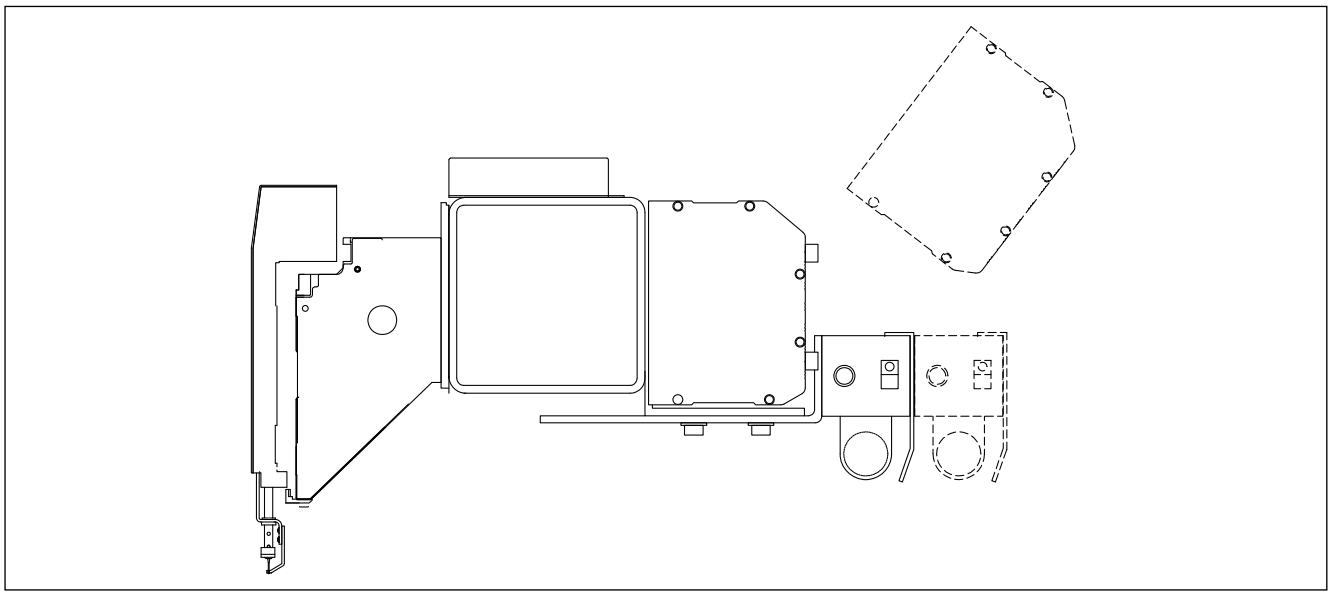
7-7-2) Disassembling Cable Cover (4-head)

If you have to open the cable cover for machine repair, etc., follow the procedures below.

① Slightly unfasten the six screws underneath the lamp bracket.

② Take out the lamp and open the cover. Do repair or other necessary work.

③ When finished, re-assemble the cover, push the lamp forward and fasten the bracket screws.



[Fig.7-13]

CHAPTER 8

TROUBLESHOOTING

⚠ DANGER CAUTION	Inspect/repair the machine by the guideline when in machine failures.

Error Type	Cause	Inspection & Repair	Reference
Operation failure	① Loose belt tension / belt damage	Adjust belt tension / change belt	
	② Power failure or short-circuit of fuse	Check fuse in main shaft motor and change fuse	
	③ Failure to sense signals for needle position or 1 rotation	Run manual color change and check if signal lamps (needle set lamp & needle position lamp) blinks at correct needle position. Adjust the half-turn film.	
	④ Red light on X/Y drive box	Address the cause and press RESET. Check if the lamp turns green.	
	⑤ Machine does not start at START	Check connection of START switch	
Incorrect Stop Position	① Loose tension on main driver belt	Adjust belt tension	
	② Incorrect position of encoder or bad encoder	Adjust encoder position or change encoder	

Error Type	Cause	Inspection & Repair	Reference
Bad Color Change	① Incorrect position of needle stop	Refer to user's manual	Set main shaft angle back at 100°, if you manually moved it for cleaning, inspection or repair.
	② Failure to sense signals for needle position or 1 rotation	Run manual color change and check if signal lamps (needle set lamp & needle position lamp) blinks at correct needle position. Adjust the half-turn film.	
	③ Incorrect position of needle bar	Set it to the correct position	
	④ Bad connection	Change fuse F3 in joint board or check connection	※ Check fuse spec.
Bad jump	① Bad Motor and bad motor wiring	Check wiring and change motor	
	② Bad connection	Check connection	
	③ Switch failure on tension adjusting board and bad circuit board	Change switch and circuit board	

Error Type	Cause	Inspection & Repair	Reference
Bad stitch quality	① Bad tape	Correct tape	
	② Inadequate tension on X-Y belt	Adjust tension	
	③ Foreign substance in X-Y rail	Clean the rail	
	④ Failure of X/Y driver board	Change circuit board	
	⑤ Heavy load on frame	Reduce speed of main shaft	
Broken Needle Bar Pin	① Crooked needle bar pin		
	② Use of a poor-quality needle bar pin	Exchange of Needle Bar Pin	
	③ Abrasion or transform of the edge of the needle		
	④ The needle bar pin contacts near the eye of a needle in plate	• Check that the clamping screw of needle plate has not come loose. • Adjust the position of the needle bar	
	⑤ Installation of the wrong needle bar pin	Correct Installation of Needle Bar Pin	
When the fluorescent lamp is not properly operating, one of the following might be the reason:	① Cable fuse short-circuit	Replace the cable fuse	※ Change fuse spec
	② Circuit fuse short-circuit	Replace the con. box lamp ass'y fuse	※ Change fuse spec
	③ Expired lifespan of the lamp	Replace the fluorescent lamp	※ Change fuse spec

CHAPTER 9

BLOCK DIAGRAM

1) BLOCK DIAGRAM OF SWF/M-SERIES