

INSTRUCTION

MAC100

Industrial Sewing Machines

First published : March 2003

No. 030043

KANSAI
SPECIAL®

INTRODUCTION

Thank you for your purchasing Kansai Special's MAC100.

Read and study this instruction manual carefully before beginning any of the procedures and save it for later use.

1. This instruction manual describes adjustments and maintenance procedures on this machine.
2. Before starting the machine, check to make sure the pulley cover, safety cover, etc. are secured.
3. Before adjusting, cleaning, threading the machine or replacing the needle, be sure to turn off the power.
4. Never start the machine with no oil in the reservoir.
5. Refer to the parts list as well as this instruction manual before performing preventive maintenance.
6. The contents described in this instruction manual are subject to change without notice.

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【1】 NEEDLES & THREADING THE MACHINE

1-1 Needles

UO163 of Schmetz or Organ

Select the proper needle for the fabric and thread.

< Comparison table of needle sizes >

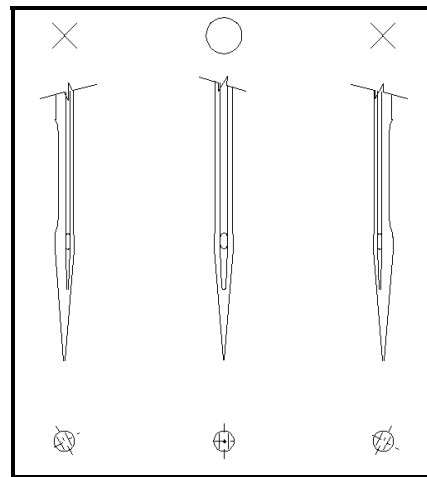
Schmetz	UY163GAS	Nm65	Nm70	Nm75	Nm80	Nm90
Organ	UO163	# 9	#10	#11	#12	#14

1-2 Replacing the needle

When replacing the needle, check the needle carefully to see that the scarf is turned to the rear of the machine (see the illustration).

< Note >

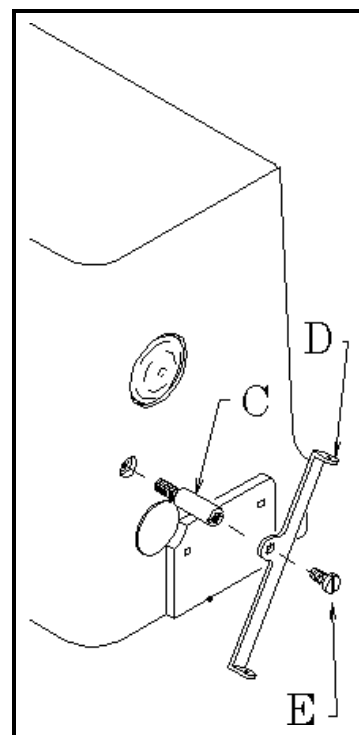
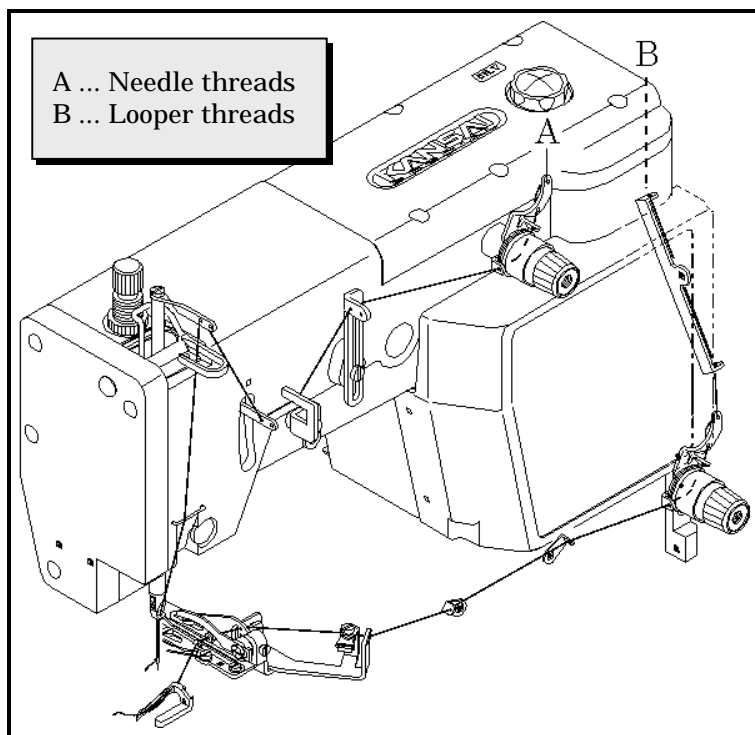
When replacing the needle, be sure to turn off the machine. A clutch motor continues running for a while after the machine is turned off. Therefore keep on pressing the pedal until the machine stops.



1-3 To thread the machine

Thread the machine correctly by referring to the illustration below. Incorrect threading may cause skip stitching, thread breakage and/or uneven stitch formation.

Furthermore, set the thread eyelet D, screw C, screw E (see the illustration).



【2】 MACHINE SPEED

2-1 Machine speed & direction in which the machine pulley runs

Maximum speed : 2,500 rpm

Standard speed : 2,000 rpm

To extend machine life, run the machine approximately 15~20% below the maximum speed for the first 200 hours of operation (approx. 1 month).

Then run the machine at the standard speed.

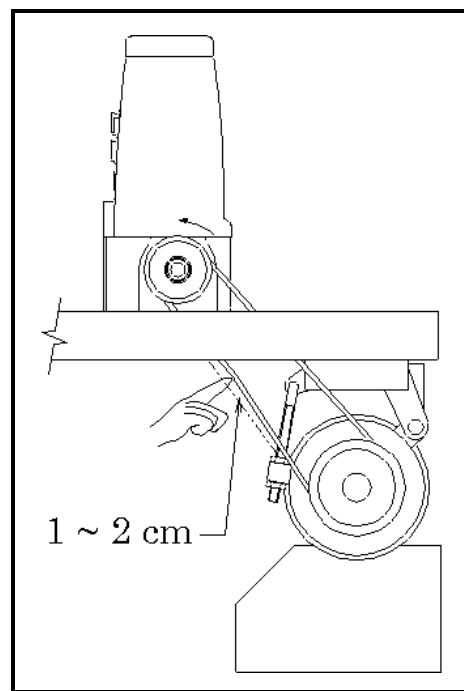
The machine pulley turns counterclockwise as seen from the end of the machine pulley (see the illustration).

2-2 Motor & belt

Motor : 3-phase, 2-pole, 400W clutch motor

Belt : M type V belt

Select the proper motor pulley according to the machine speed (refer to the motor pulley outer diameter on the table below). Adjust the position of the motor by pressing the finger onto the middle of the belt so that 1~2cm deflection can be achieved (see the illustration).



< Motor pulley selection table >

Motor pulley outer diameter (mm)	Machine speed (SPM)	
	50Hz	60Hz
40	1650	1950
50	2050	2450
60	2500	2950
70	2900	3450

【3】 LUBRICATION

3-1 Oil

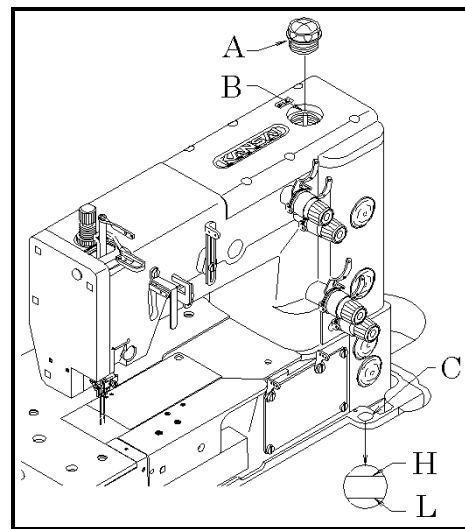
Use Kansai Special's genuine oil
(Part No. 28-611)

3-2 To fill the machine with oil

Remove oil plug A. Fill the machine with oil until the oil level is at the top line (see H in the illustration) on oil gauge C.

After the first lubrication, add oil so that the oil level will be between H and L.

After filling the machine with oil, tighten plug A and run the machine to check the oil is splashing from oil pipe outlet B.

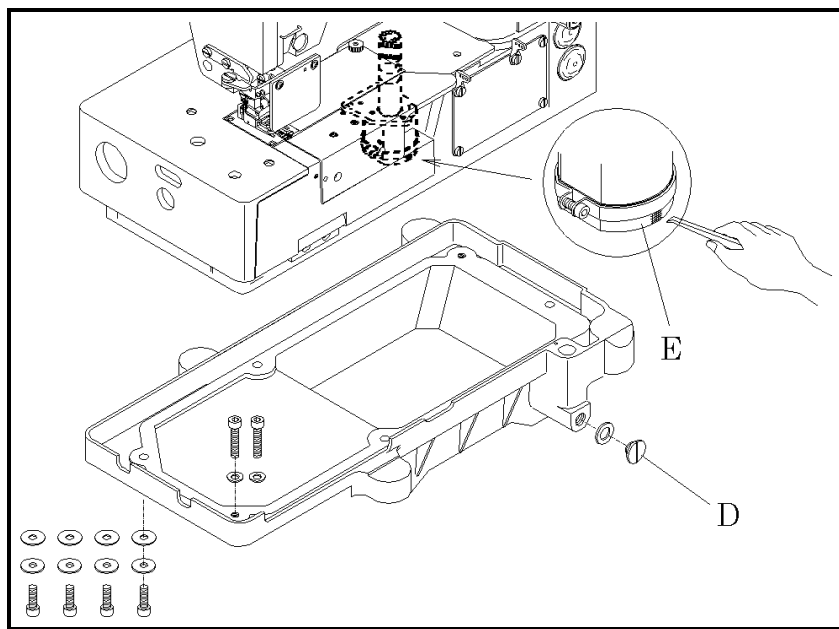


3-3 Replacing the oil and the filter element

To extend machine life, be sure to replace the oil after the first 250 hours of operation.

To replace the oil, follow the procedures below.

1. Remove the V belt from the motor pulley and then remove the machine from the table.
2. Remove screw D and then drain the oil.
Be careful not to stain V belt with the oil.
3. After draining the oil, be sure to tighten screw D.
4. Fill the machine with oil by referring to 3-2 shown above.



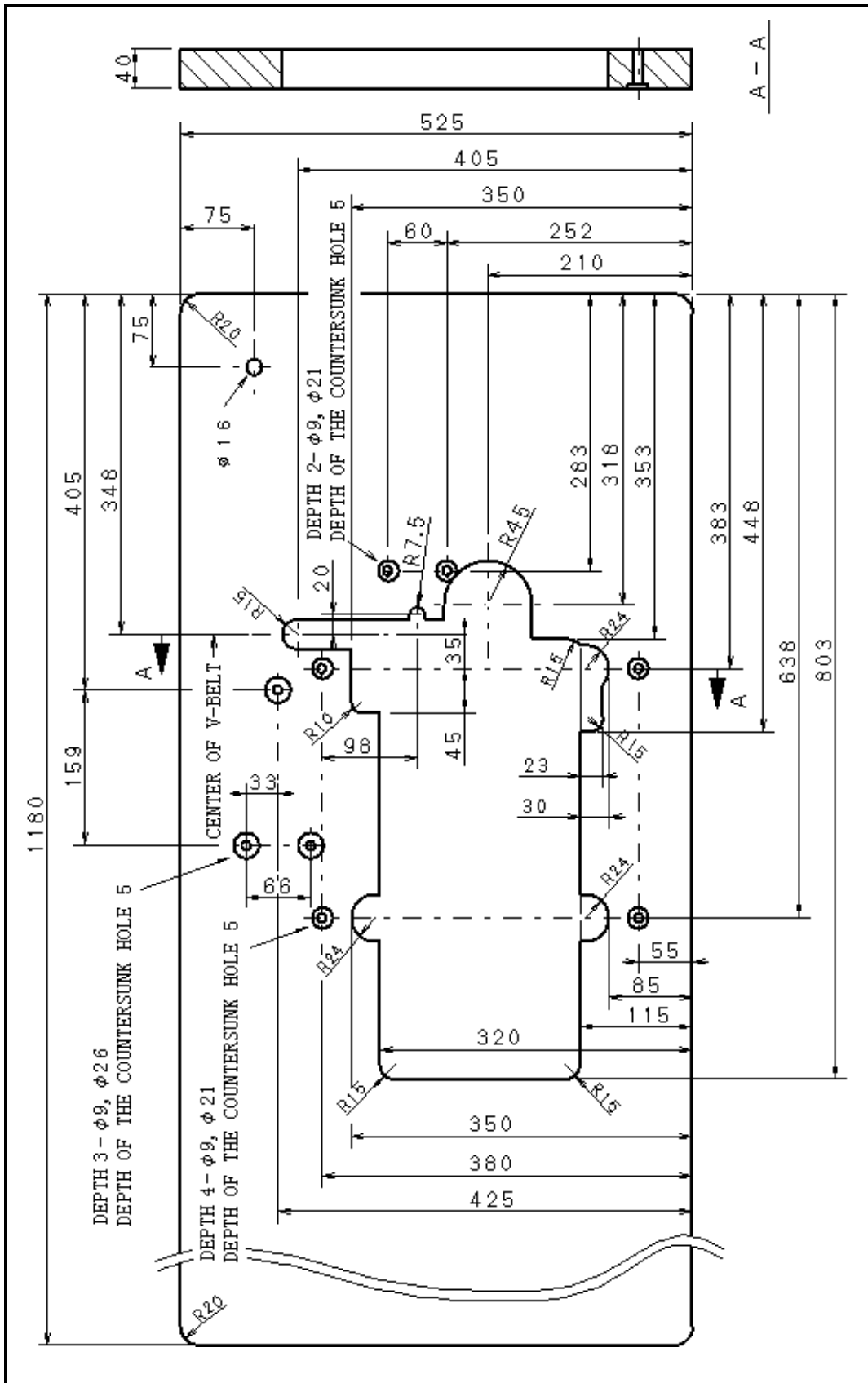
If filter element E is contaminated, proper oiling may not be performed.

Clean the filter element every six months. If just a little or no oil flows out from the nozzle with the proper amount of oil in the machine, check the filter element.

To clean the filter element, remove oil reservoir.

【4】 SEWING MACHINE INSTALLATION

4-1 Cutting the machine table

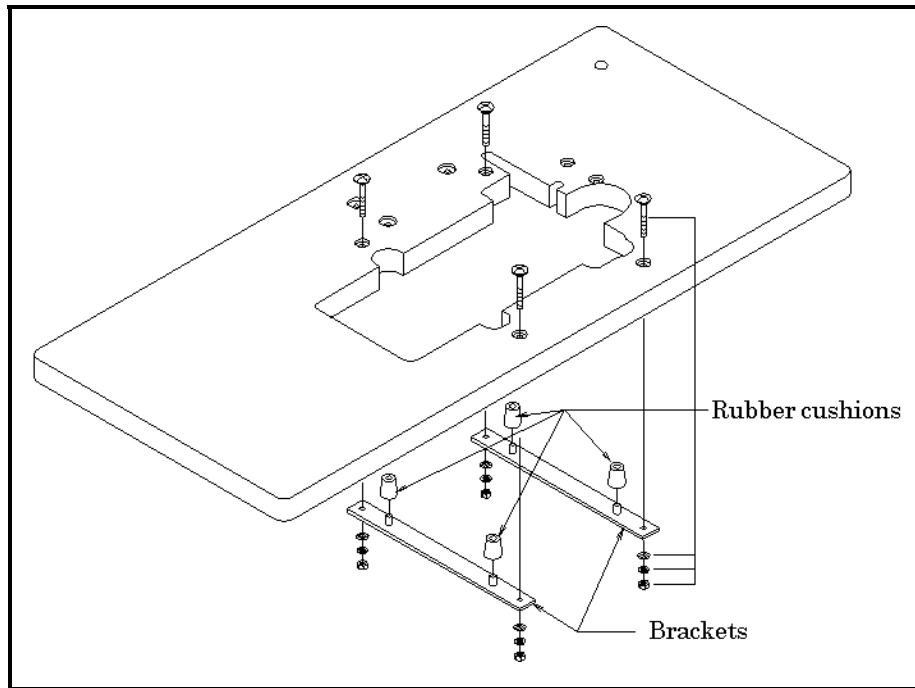


4-2 To install the machine

Install the brackets on the underside of the table board (see the illustration below).

Fit the rubber cushions onto the brackets.

Mount the machine head on the rubber cushions correctly.



【5】TIMING OF THE LOOPER TO THE NEEDLE

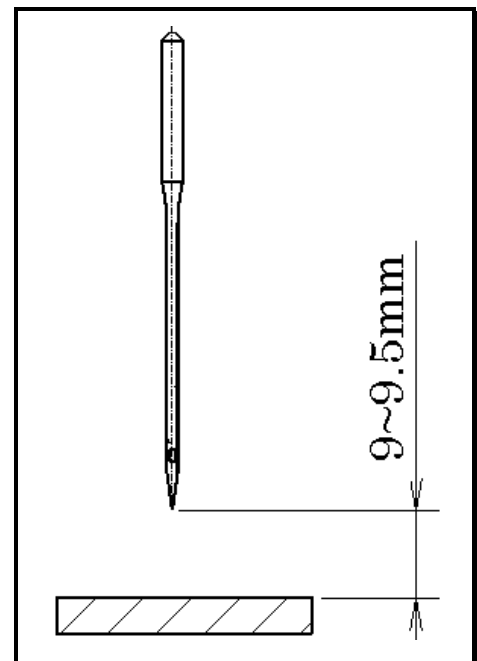
5-1 Needle height

When the needle bar is at the top of its stroke (needle position 2~3), there should be a distance of approximately 9~9.5mm from the top surface of the needle plate to the point of the needle.

Adjustment is made by loosening screws A.

< Note >

After the above adjustment is made, check to make sure each needle drops correctly into the center of each needle drop hole.



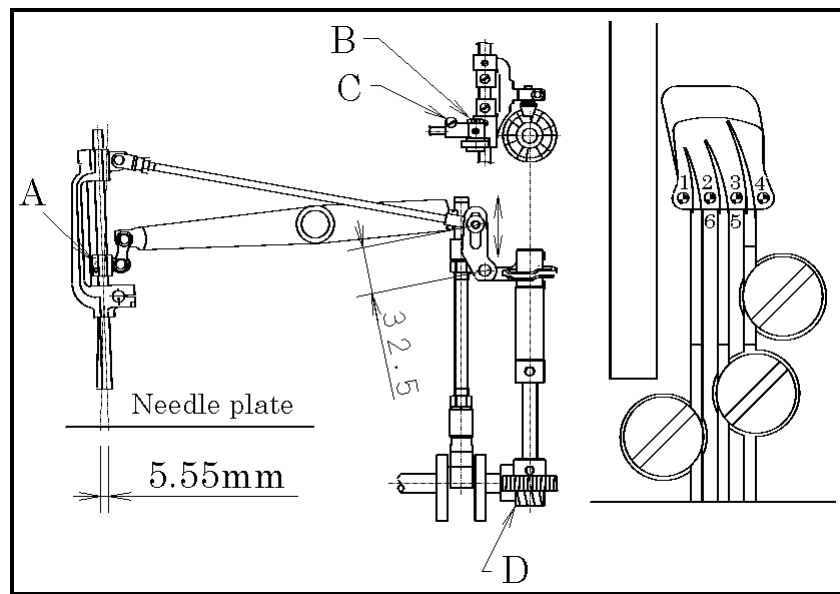
5-2 Needle drop and needle side stroke

The needle side stroke on this machine is 5.55mm. To increase the stroke, loosen screw B and move it up in the slot. To decrease the stroke, loosen screw B and move it down in the slot. The point of the needle should be centered left to right between fingers of the needle plate when the needle drops to the needle plate. Adjustment is made by loosening screw C. The needle side stroke movement should start when the point of the needle moves up from the top surface of the needle plate. The needle side stroke movement should stop when the point of the needle reaches the top surface of the needle plate.

This timing adjustment is made by worm gear D. To adjust the position of the needle drop, loosen screws A and turn the needle bar as required.

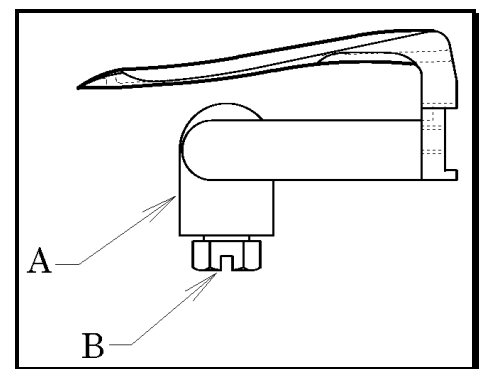
< Note >

Position of the needle drop 1, 2, 3, 4 from the left side, 4 is the extreme right end.
4, 5, 6, 1 from the right side



5-3 To install the looper

To set the angle and height of the looper, insert the looper fully into looper holder A and tighten screw B.



5-4 Position of the looper rocker

The setting distances of the looper with the needle at position 4 and position 1 should be equal (see 5-2).

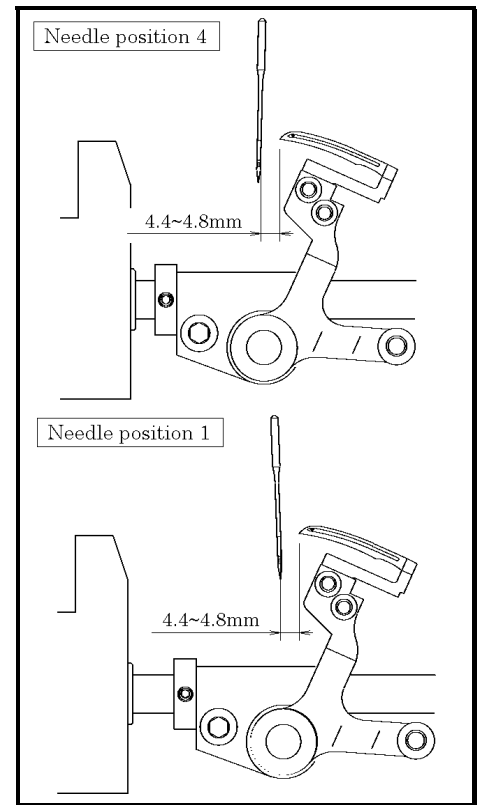
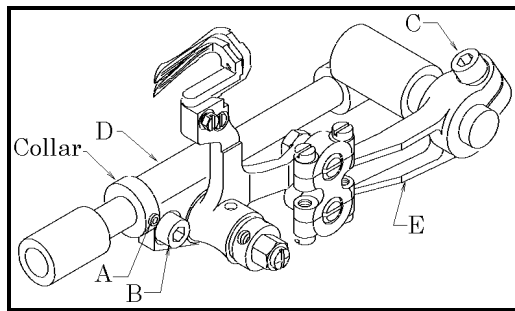
To achieve this adjustment, loosen screw A to loosen the collar. Loosen screws B and C.

Then adjust looper rocker D and lever E.

Example

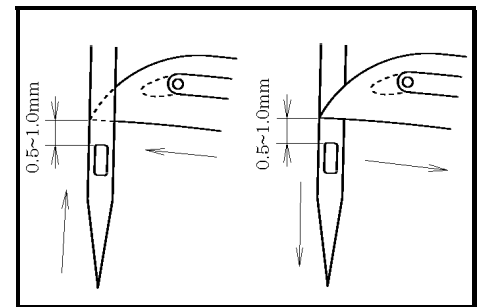
If the setting distance with the needle at position 4 is 4mm and the setting distance with the needle at position 1 is 5mm, move looper rocker D approximately 1mm to right. After the adjustment is made, tighten screws B and C securely.

Then tighten screw A with the collar fitted onto looper rocker D.



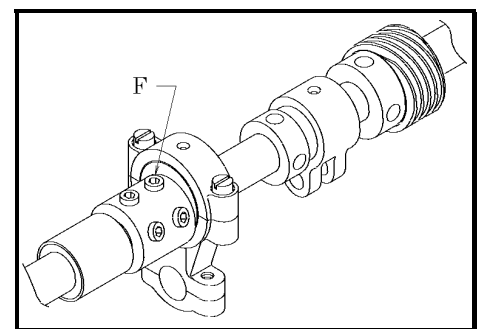
5-5 Looper left-to-right movement

This adjustment should be made when the needle is at position 1 (see 5-2). When the point of the looper, moving to left or right position, has reached the left side of the needle, it should be 0.5~1mm above the top of the needle's eye. It means the timing of the looper should be the same. (See the illustration on the right.)



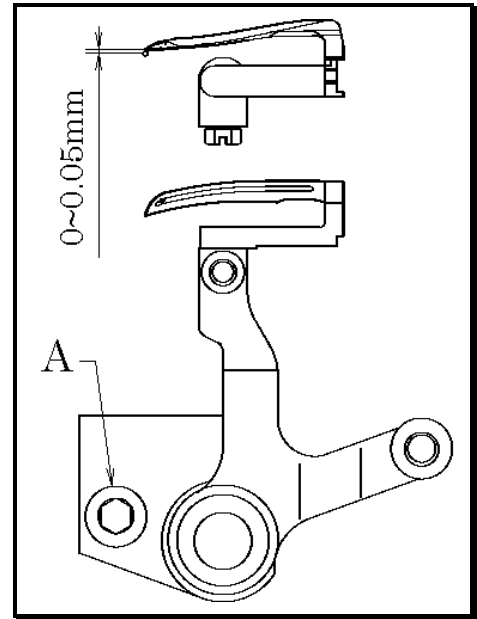
Adjustment is made by loosening three screws F.

After the adjustment, tighten these three screws equally.



5-6 Looper/needle front-to-back relationship

Adjust when the needle is at position 3 or 5 (see 5-2).
When the point of the looper is at the center of the needle, there should be a clearance of 0mm between the needle and the looper.
Adjustment is made by loosening screw A.



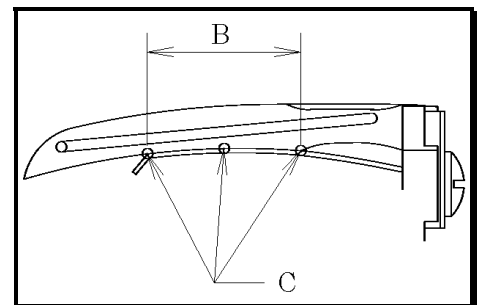
5-7 Looper setting distance

Check the looper setting distance by referring to the table below.
If the looper setting distance is not correct, perform 5-4, 5-5 procedure again.

Needle position	Setting distance (mm)
1 , 4	4.6
2	3.5~4.0
3 , 5	5.0~5.5
6	4.0~4.5

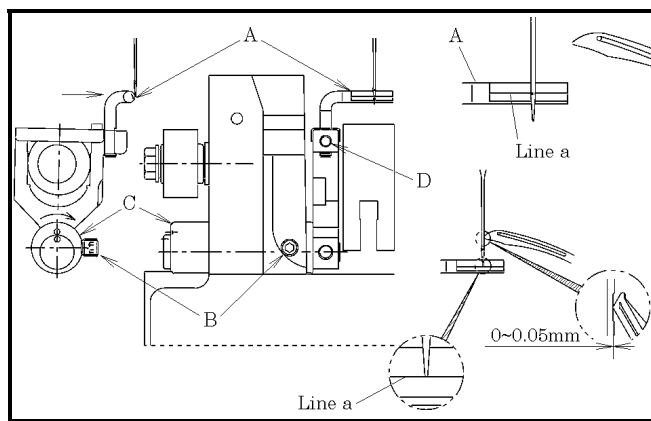
5-8 Adjusting the looper back spring

It is the best that the surface of the spring touches the looper closely within the range of B.
Check to see if the surface of the spring touches the looper closely at least on points C within the range of B. Spun thread #60 should be removed from the spring at approximately 80~100g of tension.



【6】 ADJUSTING OF NEEDLE GUARD

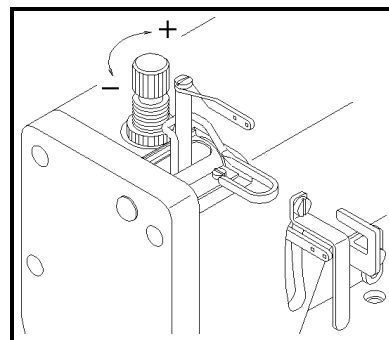
Align the line (a) on the needle guard (A) with the center of the needle hole when the needle is at the bottom of the stroke. Then, set up the clearance at 0mm between needle and needle guard. Adjust the height of the needle guard with screw (D). Adjust the front to back of the needle guard with bush (C) by hand-turning after loosening of screw (B). The needle guard is forward to the front when hand-turning to the clockwise direction. And it is backward to the back when hand-turning to the counter-clockwise direction. Fasten the screw (B) after adjusting. But, do not fasten the screw (B) up so tightly. When the top of the looper has reached the center of the needle from the right side position, Adjust the clearance at 0~0.05mm between the needle and the top of the looper. At the same time, check and adjust the position of the line (a) on the needle guard (A), which should be positioned at the top of the needle.



【7】 ADJUSTING THE PRESSER FOOT

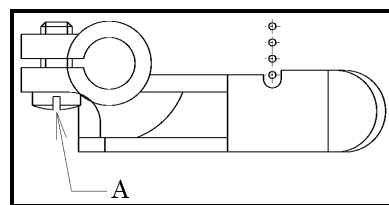
7-1 Presser foot pressure

The presser foot pressure should be as light as possible, yet be sufficient to feed the fabric and produce uniform stitches. To increase the presser foot pressure, turn the adjusting knob clockwise (see the illustration on the right).



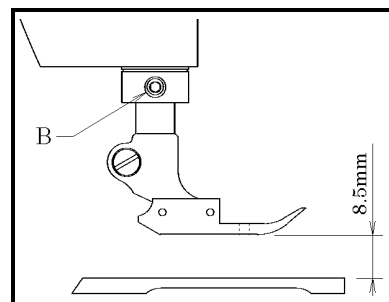
7-2 Position of the presser foot and foot lift

The presser foot should not touch the needle. Adjustment is made by loosening screw A and then moving the presser foot to the right or left.



Foot lift

Fit the collar onto the bushing with the presser foot 8.5mm above the top surface of the needle plate. Then tighten screw B.



【8】 ADJUSTING THE STITCH FORMATION

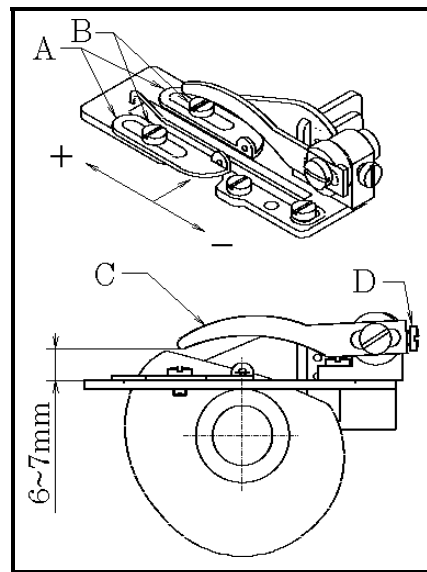
8-1 Adjusting the looper thread eyelets

Align the eyes on the looper thread eyelets A with the center line of the shaft. Adjust looper thread eyelets A according to sewing conditions such as the fabric or thread to be used by loosening screws B.

To increase the amount of the thread to be supplied, move the eyelets backward. To decrease the amount of the thread to be supplied, move the eyelets forward.

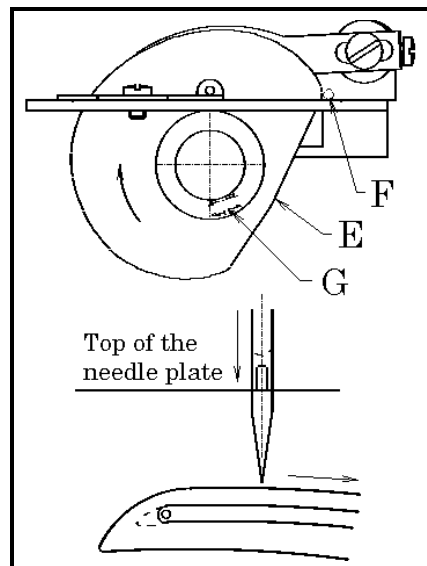
Thread guide C should be 6~7mm above the guide plate.

Adjustment is made by loosening screw D.



8-2 Position of the looper thread take-up

When the bottom of the needle's eye has reached the top surface of the needle plate while the needle is descending, the looper thread taken up by looper thread take-up E should be removed from the looper thread take-up at point F. Adjustment is made by screw G.

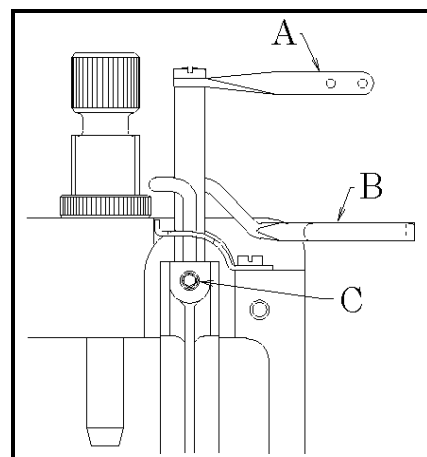


8-3 Adjusting the needle thread guard

With the needle bar at the bottom of its stroke, the centers of eyes on needle bar thread eyelet A should be level with the top surface of needle thread guard B.

Adjustment is made by screw C.

To tighten the needle thread, move up needle bar thread eyelet A. To loosen the needle thread, move down needle bar thread eyelet A.



【9】 ADJUSTING OF FEED MECHANISM

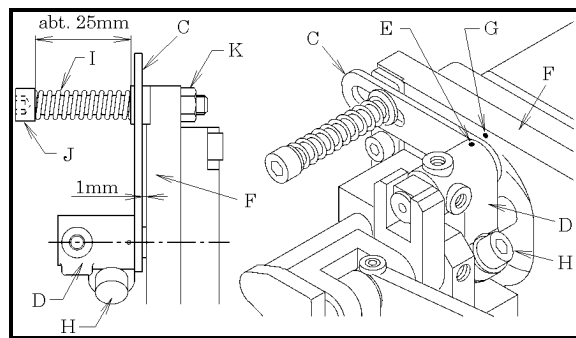
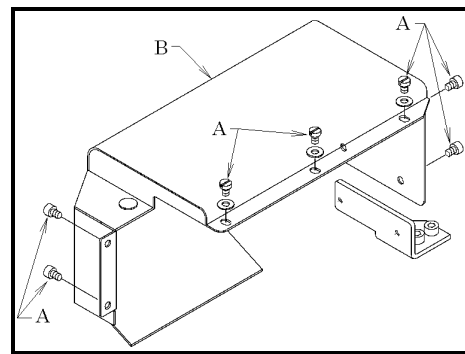
9-1 Position of motor shaft lever

Disassemble the motor cover (B) by loosening of 7 pieces of the screw (A). Align the mark (E) on the motor shaft lever (D) to the mark (G) on the motor mounting plate (F). Adjust and fasten the bolt (H) to set the clearance at 1mm with parallel position between the connecting plate (C) and the motor mounting plate (F). To make this adjustment easily, the side surface (N) of the motor shaft lever (D) shall be aligned to the side surface (L) of motor shaft.

Refer to below fig.

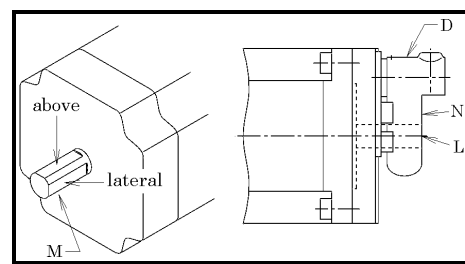
< Note >

When adjusting the position of motor shaft lever, be careful the position of 2 places of the flat surface on the motor shaft (M) at the opposite side. One flat surface should be positioned to the above-direction. One more flat surface should be positioned to the lateral-direction such as below fig. Adjust and fasten the bolt (H).



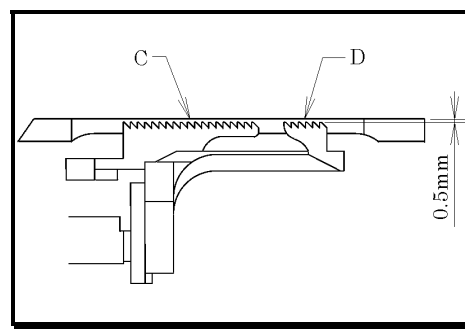
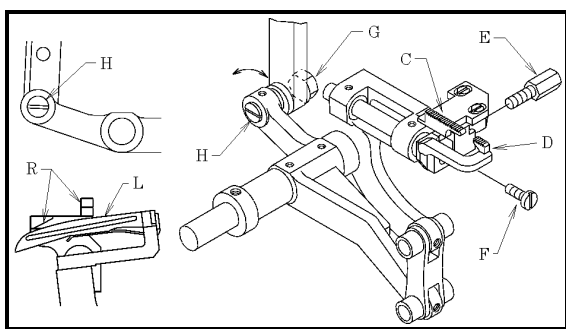
9-2 Adjusting of motor spring

The length of motor spring (I) is about 25mm. Adjust the length by the bolt (J) and nut (K).



9-3 Adjusting of feed dog height

When the motor shaft lever is positioned at 9-1. The feed dog teeth (C) and (D) should be positioned at 0.5mm lower than the top surface of the needle plate. Normally, adjust the height by screw (E) and (F). The eccentric pin (H) should be used when the precise-adjustment is needed. Normally, the driver-groove of the eccentric pin (H) is horizontal position. After loosening of the nut (G), turning the pin (H) to the direction of clockwise, then, the height of the feed dog (C) and (D) is downward. And it is upward when turning to the counter-clockwise. During this adjustment, be careful not to interfere the looper (L) against the feed dog (R).



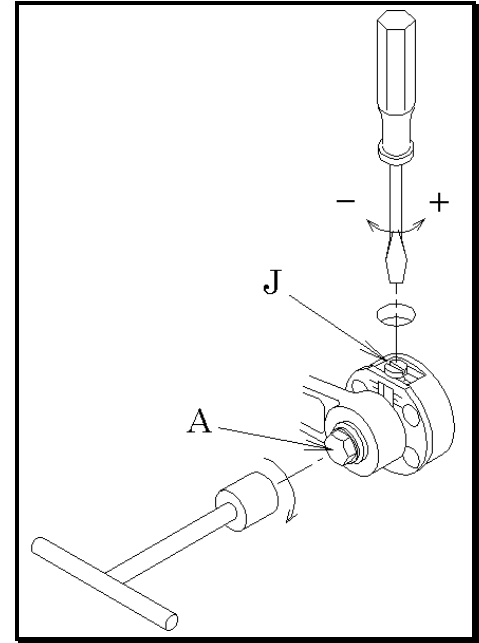
9-4 Adjusting of stitch length

Loosen bolt A with a 9.5mm T-wrench.

Then turn screw J as required.

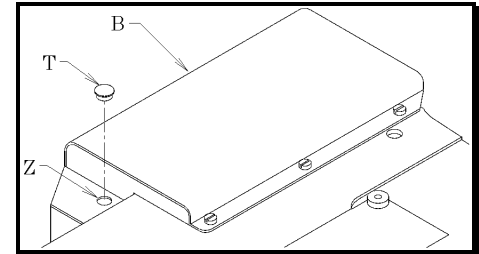
To decrease the stitch length, turn it clockwise.

To increase the stitch length, turn it counterclockwise (see the illustration on the right).



9-5 Lubrication

Lubricate the oil in properly to the oil hole (Z) regularly, after taking the rubber-plug (T) out from the motor cover (B).



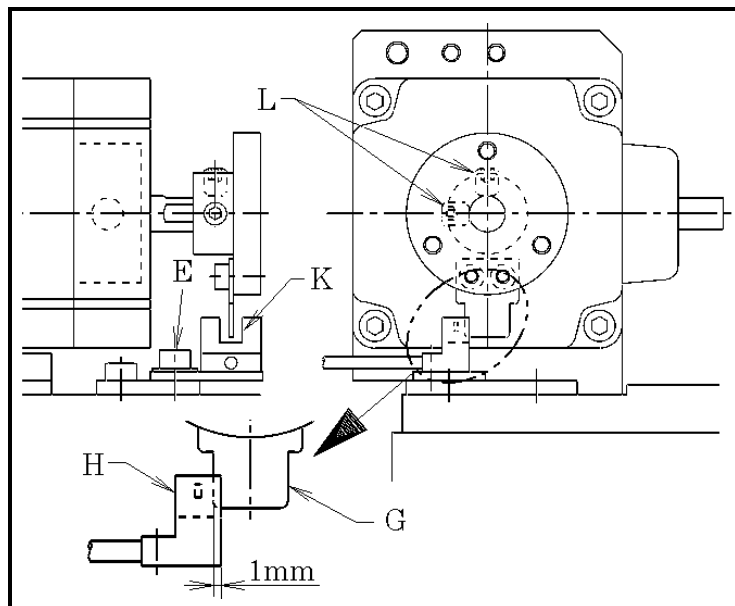
9-6 Position of sensor

1. Initial position sensor (Refer to 9-1.)

Disassemble the motor cover (B). After loosening the screw (E), adjust the position at 1mm between the proximity sensor (H) and the detector (G).

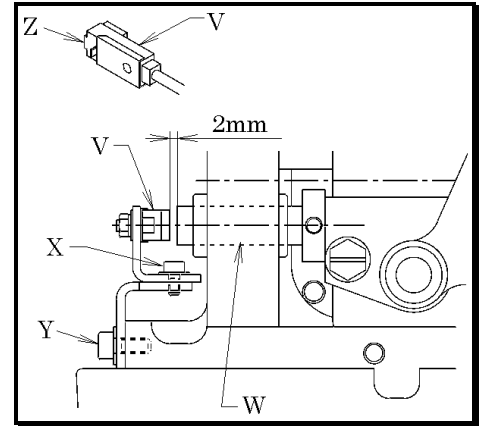
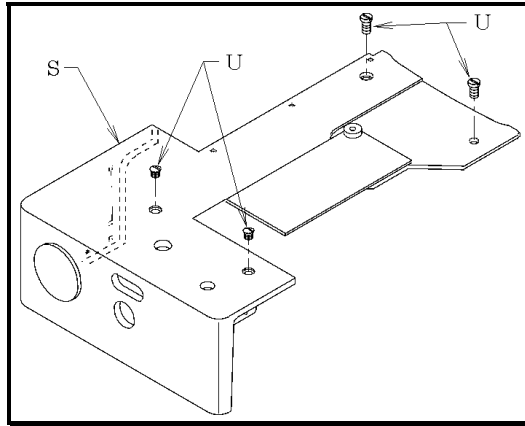
At this adjustment, the mark (E of 9-1) on the motor shaft lever and the mark (G of 9-1) on the motor mounting plate should be aligned.

After loosening the screw (L), adjust the right-left position of the detector (G), in order to set it to the center of the place (K) of the proximity sensor (H).



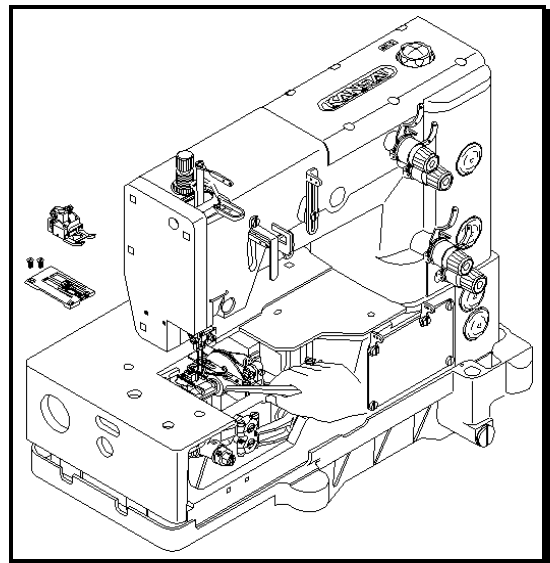
2. Needle position sensor

Disassemble the upper base cover (S) after loosening 4 pcs. of the screw (U).
When the needle is positioned at the end of left side and also at the bottom dead point, adjust the clearance at 2mm between the looper shaft (W) and the proximity sensor (V), by adjusting the screw (X). During this adjustment, confirm the turning on the lamp (Z) of the proximity sensor (V). The up-down position of the proximity sensor (V) should be aligned to the center of the looper shaft (W), by adjusting the screw (Y).



【10】 CLEANING THE MACHINE

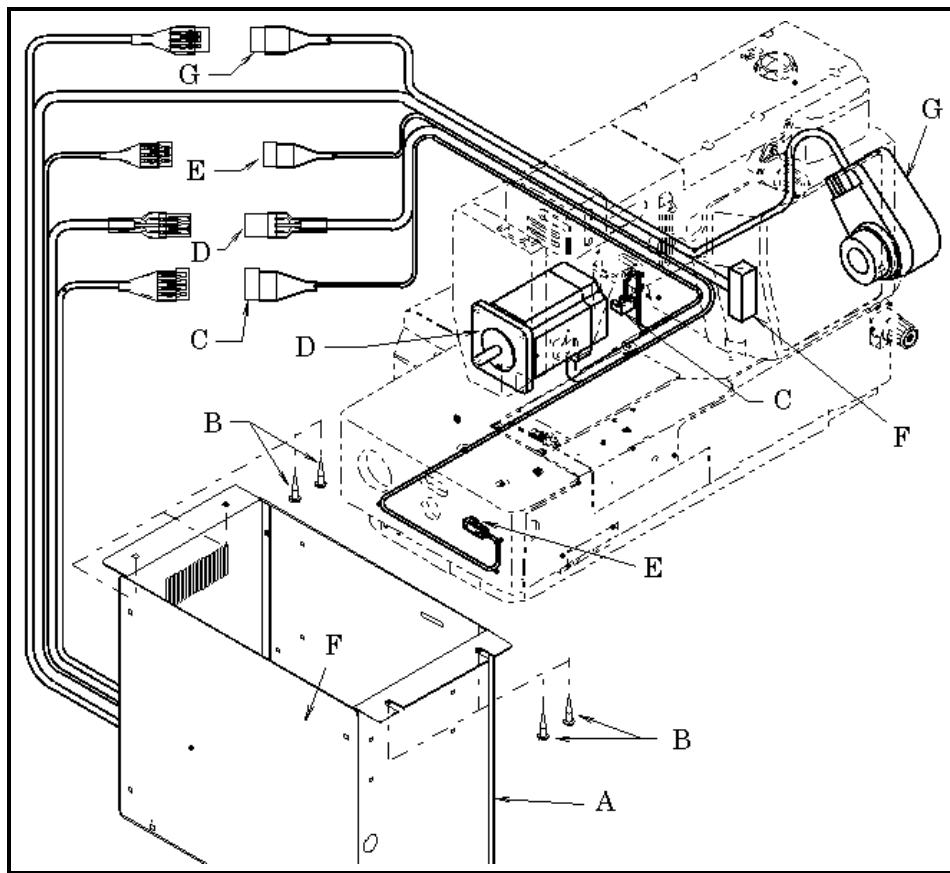
At the end of each day, remove the presser foot and the needle plate and then clean the slots of the needle plate and the area around the feed dogs.



【11】 OPERATION PANEL AND CONTROL BOX

11-1 Mounting and wiring of control box

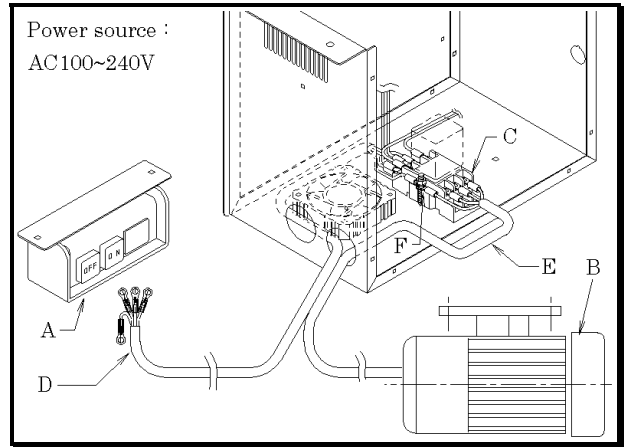
Wiring of connectors



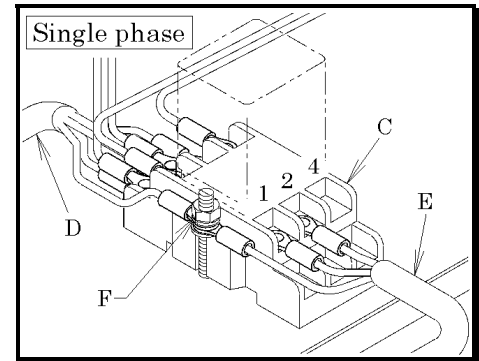
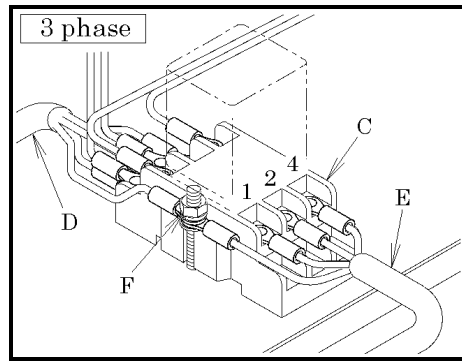
Mount the control box (A) under the table in proper place by 4 pcs. of the screw (B).
Connect the following connectors to conformable pairs.

Parts	Description
Proximity sensor C	MOLEX 4 PIN
Stepping motor D	MOLEX 6 PIN
Proximity sensor E	MOLEX 3 PIN
Panel board F	OMRON 26 PIN
Position transmitter G	MOLEX (AMP) 6 PIN

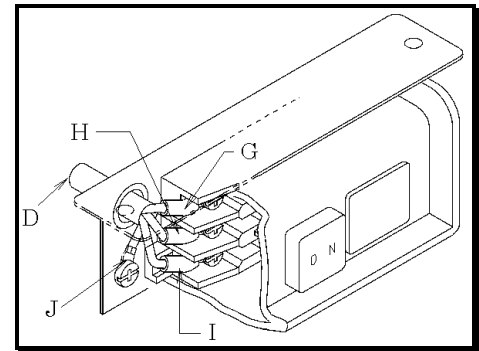
Wiring of clutch motor and control box
 Connect the electric cord (E) of the clutch motor (B) to the terminal of the relay socket (C) in the control box.
 If the electric cord of the clutch motor is already connected to the ON-OFF switch of the table, remove it and re-connect it to the terminal of the relay socket (C).
 Then, connect the electric cord (D) of the relay socket (C) to the ON-OFF switch.



In case of 3 phase motor, connect to the terminal 1, 2, 4 on the upper row of the relay socket (C). In case of single phase motor, connect to the terminal 1,2 on the upper row of the relay socket (C). Make sure to connect the earth cord (green or green / yellow color) to (F) together with the earth cord of the electric cord (D).



Wiring of the electric cord (D)
 The following fig. is the wiring method of 3 phase cord. In case of single phase, connect to only 2 cord.
 Make sure to insulate one more cord (black color) by an insulating tape etc. Also make sure to connect the earth cord to (J).



< Specifications >

Power source:

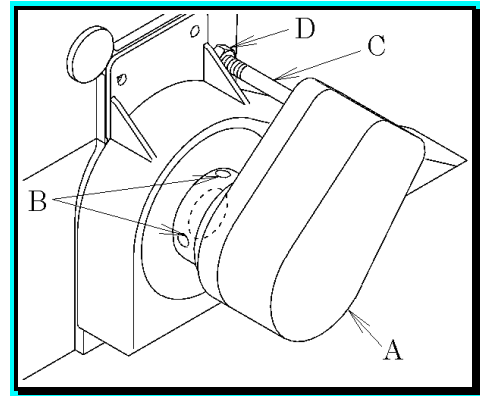
Available in the following voltages AC 100~240V

< Note >

When connecting electric cord, make sure to turn off the switch of main power source.

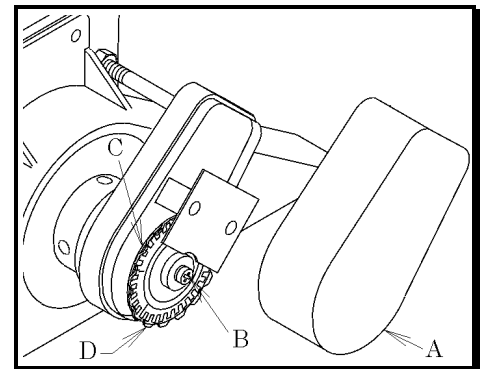
11-2 Mounting of position transmitter

1. Mount the position transmitter (A) to the pulley.
Then, temporary-fasten the screw (B).
2. Set the position-bar (C) to the guide groove of the position transmitter (A).
Then, fasten the nut (D).
3. Turn on the ON-OFF switch.
4. Confirm whether the lamp of the upper dead point and the bottom dead point (refer to 11-4. fig. 11, 12) on the operation panel turns on at the needle upper dead point and the needle bottom dead point or not, by hand-turning of the hand wheel.



Adjusting of the needle stopping position

1. Loosen the screw (B) slightly after taking off the cover (A).
2. Adjusting of the needle upper dead point;
Firstly, move to keep the needle position at the upper dead point. Then, move to adjust the detector disc of the upper dead point (C: inner disc-black color), until turning on the lamp of the upper dead point (refer to 11-4. fig. 11) on the operation panel. After that, fasten the screw (B).
3. Adjusting of the needle bottom dead point;
Move to keep the needle position at the bottom dead point. Then, move to adjust the detector disc of the bottom dead point (D: outer disc-red color), until turning on the lamp of the bottom dead point (refer to 11-4. fig. 12) on the operation panel.
In this case, no need to loosen the screw (B).

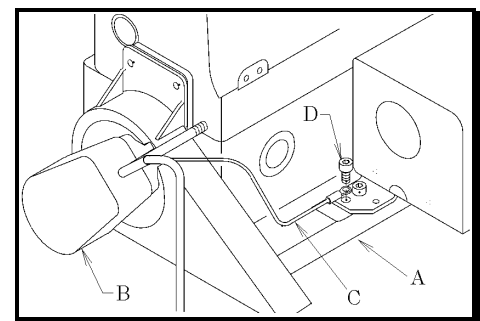


11-3 Connecting of earth terminal

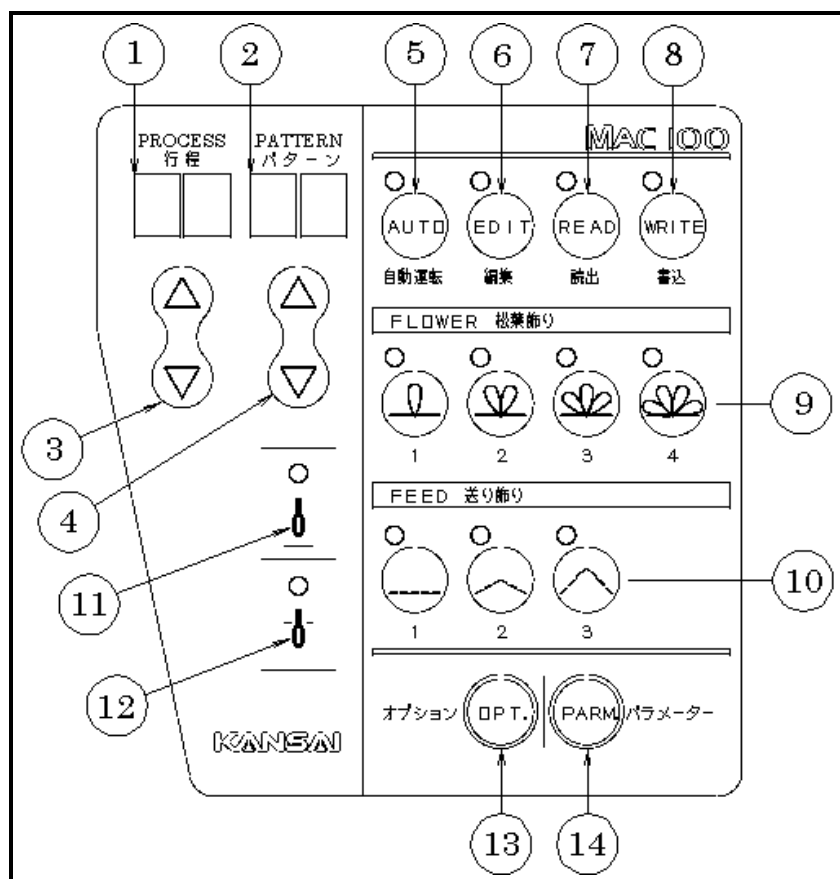
Connect the earth cord (C) of the position transmitter (B) to the machine head (A) by the bolt (D).

< Note >

Make sure to connect the earth cord to the machine head. If not, it may cause to make a miss-operation.



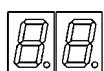
11-4 Operation panel Name and function



< Note >

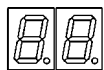
Flower pattern No.4 is not available on MAC-100 yet.

LED (PROCESS)



Display the present setting process.

LED (PATTERN)



Display a certain stitch number from the whole decorative stitches numbers within process.

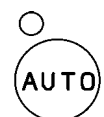
(SETTING)

(SETTING)



To be used to set the numerical value of and .

AUTOMATIC OPERATION KEY (AUTO)



To be used to start the sewing.
When turning off the lamp, it is impossible to start the sewing.

EDIT KEY (EDIT)



To be used to make the continuous decorative stitches in PROCESS. After pressing this key, please start to enter the programming of stitch pattern.

READ KEY (READ)



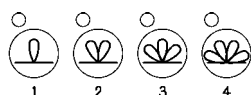
To be used to confirm the pattern content of each process. After pressing this key, please confirm the pattern content which programmed by the setting key and . The display sequence of each key and corresponds to the continuous decorative stitches.

WRITE KEY (WRITE)



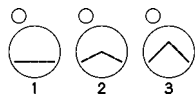
To be used to enter the changing of stitch when programming of the pattern.

FLOWER PATTERN KEY (FLOWER)



To be used to program the pattern. But, it is impossible to enter twice of the flower pattern continuously without feed pattern.

FEED PATTERN KEY (FEED)



To be used to program the pattern. Please note that PATTERN 01 in the PROCESS is always set FEED PATTERN.

UPPER DEAD POINT-LAMP



When the needle is positioned at the upper dead point, the lamp turns on.

BOTTOM DEAD POINT-LAMP



When the needle is positioned at the bottom dead point, the lamp turns on.

OPTION KEY (OPT)



When pressing this key, the display of LED and are changed to the needle count numbers. (Refer to 11-5.)






PARAMETER KEY (PARM)



When pressing this key, the display of LED and are changed to the operation timing of the feed dog and the up-down movement of the feed dog etc. (Refer to 11-5.)

Sewing (AUTOMATIC OPERATION)

The following combination pattern are already saved to the machine when you start sewing. The sewing pattern can be made by the combination for 4 kind of flower pattern and 3 kind of feed pattern .

行程 / Process	使用パターン / Combination Pattern	模様 / Stitch
0 1	Feed pattern No.3 (Single picot)	
0 2	Feed pattern No.1 + Flower pattern No.1	
0 3	Feed pattern No.1 + Flower pattern No.2	
0 4	Feed pattern No.1 + Flower pattern No.3	
0 5	Feed pattern No.3 (3times) + Feed pattern No.1 + Flower pattern No.3 + Feed pattern No.1	

* Operation procedure is as follows before sewing.

1. Turn on the ON-OFF switch of the table.
2. When power ON, the display LED shows the previous process number.
3. Display the desired process number to LED by using the setting key .
e.g. Single picot : **01**, Flower pattern No.3 : **04**
4. Turn on the lamp of the bottom dead point , by hand-turning of the pulley.
5. Press (AUTO) key.
6. Ensure the turning on the lamp of (AUTO) key.
7. Start the sewing.
8. When sewing the another process, turn OFF the lamp of (AUTO) key by pressing (AUTO) key. Then, the same sequence from the procedure 3 can be performed.

< Note >

The lamp of (AUTO) key turns on ONLY when turning on the lamp of the bottom dead point . It is possible to start the sewing when turning on the lamp of (AUTO) key. Do not operate the machine before turning on the lamp of (AUTO) key, in order to get a right stitches. (Under the condition of the POWER OFF, the clutch motor can be operated at a few rotation. Therefore, do not step on the foot pedal).

Programming of decorative stitches (EDIT)

The machine can be memorized up to 99 kinds of the process (LED display , $\boxed{01}\sim\boxed{99}$), including 5 kinds of the process $\boxed{01}\sim\boxed{05}$ which already saved to the machine when you start sewing. One process can be programmed up to 64 patterns (LED display , $\boxed{01}\sim\boxed{64}$).

< Note >

The 5 kinds of basic pattern which already saved ($\boxed{01}\sim\boxed{05}$) can easily be replaced to the new pattern by using the EDIT function. Therefore, when programming of new pattern, please start to use the bigger process number than $\boxed{06}$, in order to avoid miss programming.

* Programming procedure of new pattern is as follows.

1. Turn off the lamp of (AUTO) key by pressing (AUTO) key .
2. Set the EDIT mode by pressing the (EDIT) key .
3. Display the desired process number to be entered new pattern to LED display by using (SETTING) key . (In this case, LED display shows $\boxed{01}$ automatically)
4. Select the one desired pattern from 1~3 of FEED PATTERN .
Then, flashing the lamp by pressing the key once.
5. Enter this pattern by pressing the (WRITE) key once.
(After that, the flashing lamp turns ON).
6. Select the one desired pattern number.
Then, display it to LED display by using the SETTING key .
7. Select the one desired pattern from 7 kinds of FEED PATTERN and FLOWER PATTERN . Then, flashing the correspondent lamp by pressing the key once.
8. Enter this pattern by pressing the (WRITE) key once.
(After that, the flashing lamp turns ON).
9. Then, the same sequence from the procedure 6, 7, 8 should be performed, to make a new sewing pattern.

< Note >

*When beginning with pattern, start with FEED not with FLOWER.
After entering a flower pattern, be sure to follow by entering feed pattern.
Flower pattern must always be followed by feed pattern.*

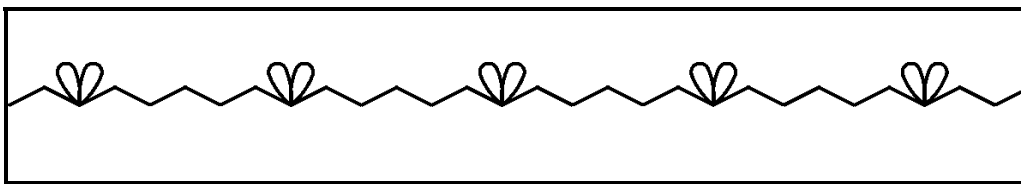
10. After entering all desired patterns, keeping to press the (WRITE) key over 2 seconds. Then, ensure one-time flashing of LED display and .
The programming of a new sewing pattern is completed.
11. Turn on the lamp of the bottom dead point , by hand-turning of the pulley.
12. After turning on the lamp by pressing of the (AUTO) key , start the sewing.

How to program

Condition : PROCESS **06**

FLOWER PATTERN , No.2 – One time

FEED PATTERN , No.2 – Three times



Procedure :

1. Turn off the lamp of (AUTO) key by pressing (AUTO) key .
2. Set the EDIT mode by pressing the (EDIT) key .
3. Display the process number **06** to LED display by using (SETTING) key .
(In this case, LED display shows **01** automatically)
4. Ensure the flashing of the lamp by pressing No.2 of feed pattern key once.
5. Enter this pattern by pressing the (WRITE) key once.
(After that, the flashing lamp turns ON).
6. Display **02** to LED display by using the (SETTING) key .
7. Repeat the procedure 4. and 5.
8. Display **03** to LED display by using the (SETTING) key .
9. Repeat the procedure 4. and 5.
10. Display **04** to LED display by using the (SETTING) key .
11. Ensure the flashing of the lamp by pressing No.2 of flower pattern key once.
12. Enter this pattern by pressing the (WRITE) key once.
After that, the flashing lamp turns ON. Next, register this pattern to process **06**.
13. Keeping to press the (WRITE) key over 2 seconds.
Then, ensure one-time flashing **06** of LED display and .
Then, the programming of the sewing pattern **06** is completed.
14. Turn on the lamp of the bottom dead point , by hand-turning of the pulley.
15. After turning on the lamp by pressing of the (AUTO) key , start the sewing.

11-5 Other function

Parameter

1. When pressing the (PARM) key , the display of LED and are changed to the other meaning of the function.
2. Change the numerical value by using the (SETTING) key and .
(The up- down movement range of the feed dog will be changed.)
3. Enter the desired numerical value by pressing the (PARM) key .
At the same time, the display meaning of LED and will be returned back "PROCESS" and "PATTERN".

No. (LED)	Function	Value range	Unit	Factory parameter (LED)
01	Changing of initial position	60~90	pulse	75
02	Changing of operation timing	6~12	pulse	10
05	Position control	00 01		00

Contents :

01 ; Changing of initial position (for the precise-adjustment)

When more feeding volume of the fabric is needed, to be increased the parameter value within the range of 75~90.

When less feeding volume of the fabric is needed, to be decreased the parameter value within the range of 60~75.

When increasing the parameter value, the feed dogs will be operated at more high position.

Then, the feeding volume of the fabric is becoming bigger.

To be used for the precise-adjustment for the purpose of making more beautiful stitch formation etc.

02 ; Changing of operation timing (for the precise-adjustment)

When setting the machine rotation over 2000rpm, if the feeding is not stabilized, use this precise-adjustment. The recommended parameter value is 7 or 6.

05 ; Manual control for initial position and feeding position

Change the indication 00 01 by key . 00 is the initial position, 01 is the feeding position of the feed dog. Use for adjustment of the feed dog height.

Optional function

1. When pressing the (OPT) key , the display of LED and are changed to the other meaning of the function.
2. Change the numerical value by using the (SETTING) key and .
(The meaning of the display are changed to the needle count numbers)
3. When pressing the (OPT) key again, the display meaning of LED and will be returned back "PROCESS" and "PATTERN".

It is countable until max. 9999 needle number.

To be read the display : x 100 + .