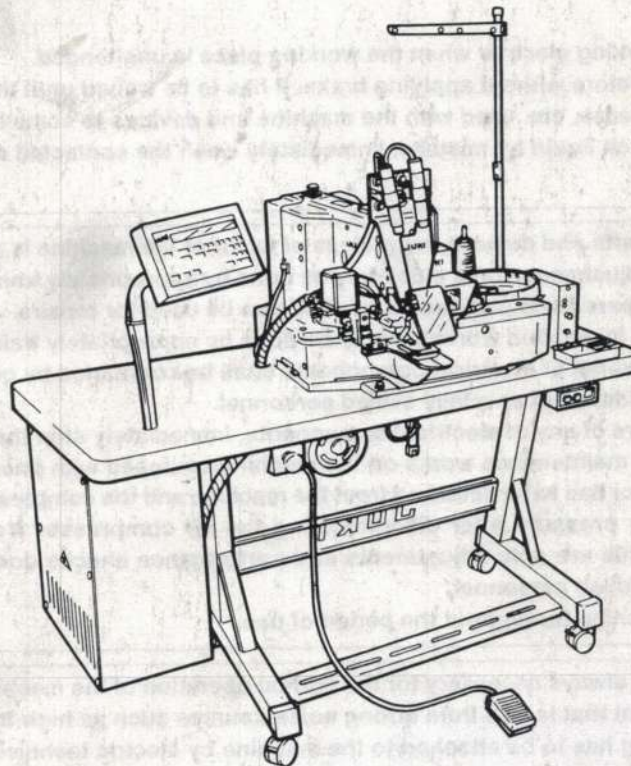


Button sewing indexer for sham buttonholes

ACF-286

INSTRUCTION MANUAL



NOTE: Read safety instructions carefully and understand them before using your ACF-286.

Retain this Instruction Manual for future reference.

I ACF-286**HERSTELLERERKLÄRUNG****DE**

im Sinne der EG-Maschinenrichtlinie 89/392/EWG, Anhang II B

Hiermit erklären wir, daß der Nähmaschineneinrichtung

KlasseI.....

Bestimmungsort-CodeJE.....

zum Einbau in eine Näheinheit oder Nähanlage bestimmt ist und daß seine Inbetriebnahme so lange untersagt ist, bis festgestellt wurde, daß die Näheinheit oder Nähanlage, in die dieser Nähmaschineneinrichtung eingebaut werden soll, den Bestimmungen der EG-Maschinenrichtlinie entspricht.

Angewendete harmonisierte Normen, insbesondere :

EN 292-1, EN 292-2, EN 60204-3-1

Die Anforderungen der EG-Niederspannungsrichtlinie 73/23/EWG sind erfüllt.

Die Anforderungen der EG-EMV-Richtlinie 89/336/EWG sind erfüllt.

MANUFACTURER 'S DECLARATION**EN**

In accordance with the EC Machinery Directive 89/392/EEC, Annex II B

We hereby declare that the sewing machine device described as

StyleI.....

Destination CodeJE.....

has been determined to be incorporated into a sewing unit or sewing system and that it must not be put into service until the sewing unit or sewing system into which this sewing machine device is to be incorporated has been declared in conformity with the provisions of the EC Machinery Directive.

Applied harmonized standards, in particular

EN 292-1, EN 292-2, EN 60204-3-1

The requirements of the EC Low Voltage Directive 73/23/EEC are met.

The requirements of the EC EMC Directive 89/336/EEC are met.

JUKI CORPORATION

T. Washinoue

Takashi Washinoue

General Manager

Quality Assurance & Control Dept

29275005

DECLARATION DU FABRICANT COMMUNAUTE EUROPEENNE

En conformité avec les directives de la Communauté Européenne 89/392/CEE, Annexe II B.

Nous déclarons par la présente que le système de commande de machine à coudre décrit comme suit :

RéférenceI.....
Code de destinationJE.....

à été conçu de telle sorte à être incorporée dans une unité de couture ou système de couture et qu'elle ne doit pas être mise en service avant que l'unité de couture ou le système de couture devant recevoir ce système de commande de machine à coudre, n'ait été déclaré en conformité avec les clauses des Directives de la Communauté Européenne se rapportant aux machines.

Normes appliquées après harmonisation, en particulier :
EN 292-1, EN 292-2, EN 60204-3-1

Les normes figurant dans les Directives CEE de basse tension 73/23/CEE sont respectées. Les normes figurant dans les Directives CEE EMC 89/336/CEE sont respectées.

Declaración de Fabricante ;

De conformidad con la Directiva CE sobre máquinas 89/392/CEE, Anexo II B.

Por la presente declaramos que ha sido determinado que el tipo del motor de la máquina de coser ;

EstiloI.....
Código de destinaciónJE.....

está destinado a ser montado en una unidad de costura o instalación de costura, debiendo comprobarse antes de su montaje que la unidad de costura o instalación de costura en la que dicho el motor de la máquina de coser debe instalarse, cumple con las disposiciones de la Directiva sobre máquinas CE.

Normas armonizadas aplicadas, especialmente :
EN 292-1, EN 292-2, EN 60204-3-1

Cumple los requisitos de la Directiva CE sobre baja tensión 73/23/CEE .
Cumple los requisitos de la Directiva CE sobre EMC, 89/336/CEE.

PRODUCENTERKLÆRING

I henhold til EU-maskinregulativ 89/392/EØF, tillæg II B

Vi erklærer herved, at symaskine-motor

TypeI.....
Kode for bestemmelsesstedJE.....

er bestemt til indbygning i en syenhed eller et syanlæg, og at dens anvendelse er forbudt, indtil det er fastslået, at den syenhed eller det syanlæg, som symaskine-overdelen skal indbygges i, svarer til bestemmelse i EU-maskinregulativet.

Anvendte, harmoniserede normer, specielt :
EN 292-1, EN 292-2, EN 60204-3-1

Kravene i EU-lavstrømsregulativ 73/23/EØF imødekommes.
Kravene i EU EMC regulativ 89/336/EØF imødekommes.

ΔΗΛΩΣΗ ΤΟΥ ΚΑΤΑΣΚΕΥΑΣΤΗ

Σύμφωνα με τους όρους του Συμβουλίου της ΕΚ περί μηχανών 89/392/ΕΟΚ, Παράρτημα II Β.

Δηλώνουμε δια του παρόντος, ότι η ρακτομηχανή (κνφεχ) που περιγράφεται σαν :

ΤύποςI.....
Πλήρης με κώγιοJE.....

πρέπει να ενσωματωθεί σε μονάδα ή σύστημα ραφής και ότι δεν θα πρέπει να τεθεί σε λειτουργία εάν δεν δηλωθεί πρώτα, ότι η μονάδα ή το σύστημα ραφής στο οποίο θα ενσωματωθεί αυτή η ρακτομηχανή τηρεί τις προδιαγραφές του Συμβουλίου της ΕΚ.

Σε εφαρμογή και σύμφωνα με τα πρότυπα: Ειδικότερα :
EN292-1, EN292-2, EN60204-3-1.

Ανταποκρίνεται στις απαιτήσεις της οδηγίας της ΕΚ περί χαμηλής τάσης 73/23/ΕΟΚ.
Ανταποκρίνεται στις απαιτήσεις της οδηγίας της ΕΚ περί μηχανών 89/336/ΕΟΚ.

TILLVERKARENS DEKLARATION

I enlighet med EU Rådets Direktiv för Maskiner, 89/392/EEC, Tillägg II B

Vi förklarar härmed att den här symaskinsmotor nedan beskriven som :

TypI.....
Betäckning kodJE.....

måste vara inmonterad i en sömnadsautomat eller sömnadssystem, och får inte tagas i bruk förrän den sömnadsautomat eller det sömnadssystem vari symaskinen skall byggas in. Överensstämmer med EU Rådets Direktiv för Maskiner.

Tillämpad standard enligt :
EN 292-1, EN 292-2, EN 60204-3-1

Krävet på EU Lågspännings Direktiv 73/23/EEC är uppfyllt.
Krävet på EC EMC Direktiv 89/336/EEC är uppfyllt.

DICHIARAZIONE DEL FABBRICANTE

Secondo le direttive CE per macchinari 89/392/CEE, Allegato II B.

Con la presente dichiariamo che il motore e la centralina di comando che aziona la macchina per cucire :

MODELLOI.....
CODICE DI DESTINAZIONEJE.....

è predestinato per il montaggio in una unità di cucitura oppure in una unità automatica di cucitura, ed il suo collaudo operativo non verrà effettuato sino a quando non sia stato constatato che l'unità di cucitura oppure l'unità automatica di cucitura, sulla quale il motore e la centralina che aziona la macchina per cucire deve essere montato, corrisponde alle direttive CE per macchinari

Norme applicate dopo armonizzazione, in particolare :
EN 292-1, EN 292-2, EN 60204-3-1

I requisiti delle Direttive EC Basso Voltaggio 73/23/EEC sono rispettati.
I requisiti delle Direttive EC EMC 89/336 EEC sono rispettati .

DECLARAÇÃO DE CONFORMIDADE CE

De acordo com a Directiva de Maquinaria da CE 89/392/EEC, anexo II B

Os abaixo assinados declaram que o motor da máquina de costura descrito como

ModeloI.....
Código destinoJE.....

se destina a ser incorporado numa unidade de costura ou sistema de costura e que não pode ser posto a trabalhar até que a unidade ou sistema de costura na qual o motor para máquina de costura seja incorporado. tenha sido declarado em conformidade com o previsto na Directiva de Maquinaria da CE .

Normas harmonizadas aplicadas: em particular :
EN 292-1, EN 292-2, EN 60204-3-1

Os requisitos da Directiva de Baixa Voltagem da CE 73/23/EEC estejam de acordo .
Os requisitos da Directiva 89/336/EEC da CE EMC estejam de acordo.

FABRIKANTENVERKLARING

Conform de bepalingen van de CE-machinerichtlijn 89/392/EEG, Annex II B, met betrekking tot de veiligheid van de machines.

Wij verklaren hiermee dat de naaimachine (naaimachine-motor) omschreven als

.....I.....
Code van bestemmingJE.....

voor inbouw in een naai-eenheid of naai-installatie bepaald is en dat de ingebruikname zolang verboden is, tot vastgesteld werd, dat de naai-eenheid of de naai-installatie, waarin deze naaimachineaandrijving zou moeten worden ingebouwd in overeenstemming met de bepalingen van de EG-richtlijn voor machines is.

Toegepaste geharmoniseerde normen :
EN 292-1, EN 292-2, EN 60204-3-1

Tevens is voldaan aan de eisen van de Laagspanning (73/23/EEG).
Tevens is voldaan aan de eisen van de Elektromagnetische Verdraagzaamheid (89/336/EEG).

VALMISTAJAN ANTAMA VAKUUTUS KONEENOSAKSI TARKOITETUSTA LAITTEESTA

Direktiivin 89/392/ETY, Liite II B, mukaisesti ilmoitamme täten, että ompelukoneen ajomootori :

MalliI.....
MääränpääkoodiJE.....

on tarkoitettu ompeluyksikön rakenteelliseksi osaksi tai liitet-täväksi ompelujärjestelmään. Sitä ei saa ottaa käyttöön ennenkuin ompeluyksiköstä tai ompelujärjestelmästä on annettu direktiivin 89/392/ETY ja siihen liittyvien kansallisten säädösten mukainen EY-vaatimustenmukaisuusvakuutus .

Koneenosan suunnittelussa on sovellettu seuraavia yhdenmukaisia standardeja :
EN 292-1, EN 292-2, EN 60204-3-1

EY Pienjännitedirektiivin 73/23/ETY määräyksiä on noudatettu.
EY EMC Direktiivin 89/336/ETY määräyksiä on noudatettu.

PRODUSENTERKLÆRING

I samsvar med EU-Maskindirektiv 89/392/EEC, tillegg II B

Vi erklærer herved at symaskinmotoren

KlasseI.....
Bestemmelsessteds-kodeJE.....

er konstruert for innbygging i en sømenhet eller et sømsystem, og at den ikke må igangsettes før sømenheten eller sømsystemet som motoren skal bygges inn i, er erklært i samsvar med bestemmelsene i EU's Maskindirektiv.

Anvendte harmonisererte normer, i særdeleshet :
EN 292-1, EN 292-2, EN 60204-3-1

Kravene ifølge EU-Lavspenningsdirektiv 73/23/EEC er oppfylt.
Kravene ifølge EU-EMC-Direktiv 89/336/EEC er oppfylt.

IMPORTANT SAFETY INSTRUCTIONS

Congratulations on your purchase of a JUKI machine.

To get the most out of the many functions of this machine and operate it in safety, it is necessary to use this machine correctly.

Please read this Instruction Manual carefully before use. We hope you will enjoy the use of your machine for a long time. Please remember to keep this manual in a safe place.

1. Observe the basic safety measures, including, but not limited to the following ones, whenever you use the machine.
2. Read all the instructions, including, but not limited to this Instruction Manual before you use the machine. In addition, keep this Instruction Manual so that you may read it at anytime when necessary.
3. Use the machine after it has been ascertained that it conforms with safety rules/standards valid in your country.
4. All safety devices must be in position when the machine is ready for work or in operation. The operation without the specified safety devices is not allowed.
5. This machine shall be operated by appropriately-trained operators.
6. For your personal protection, we recommend that you wear safety glasses.
7. For the following, turn off the power switch or disconnect the power plug of the machine from the receptacle.
 - 7-1 For threading needle(s), looper, spreader etc. and replacing bobbin.
 - 7-2 For replacing part(s) of needle, presser foot, throat plate, looper, spreader, feed dog, needle guard, folder, cloth guide etc.
 - 7-3 For repair work.
 - 7-4 When leaving the working place or when the working place is unattended.
 - 7-5 When using clutch motors without applying brake, it has to be waited until the motor stopped totally.
8. If you should allow oil, grease, etc. used with the machine and devices to come in contact with your eyes or skin or swallow any of such liquid by mistake, immediately wash the contacted areas and consult a medical doctor.
9. Tampering with the live parts and devices, regardless of whether the machine is powered, is prohibited.
10. Repair, remodeling and adjustment works must only be done by appropriately trained technicians or specially skilled personnel. Only spare parts designated by JUKI can be used for repairs.
11. General maintenance and inspection works have to be done by appropriately trained personnel.
12. Repair and maintenance works of electrical components shall be conducted by qualified electric technicians or under the audit and guidance of specially skilled personnel.

Whenever you find a failure of any of electrical components, immediately stop the machine.
13. Before making repair and maintenance works on the machine equipped with pneumatic parts such as an air cylinder, the air compressor has to be detached from the machine and the compressed air supply has to be cut off. Existing residual air pressure after disconnecting the air compressor from the machine has to be expelled. Exceptions to this are only adjustments and performance checks done by appropriately trained technicians or specially skilled personnel.
14. Periodically clean the machine throughout the period of use.
15. Grounding the machine is always necessary for the normal operation of the machine. The machine has to be operated in an environment that is free from strong noise sources such as high-frequency welder.
16. An appropriate power plug has to be attached to the machine by electric technicians. Power plug has to be connected to a grounded receptacle.
17. The machine is only allowed to be used for the purpose intended. Other used are not allowed.
18. Remodel or modify the machine in accordance with the safety rules/standards while taking all the effective safety measures. JUKI assumes no responsibility for damage caused by remodeling or modification of the machine.
19. Warning hints are marked with the two shown symbols.



Danger of injury to operator or service staff



Items requiring special attention



1. Do not put your fingers near the spinner oscillating arm path, the work clamp and the needle when turning ON the power switch and while the device is in operation.
2. Do not put your fingers near the thread take-up while the device is in operation.
3. Turn OFF the power switch when tilting the machine head, carrying out maintenance works or removing covers and V belt.
4. Neither place your fingers, head and clothes near the handwheel, belt, motor and other moving parts nor place anything on the table while the machine is in operation.
5. Do not operate the machine with any of covers, finger guard and eyeguard removed.
6. The cover of the power box has to be removed by a qualified technical personnel after turning OFF the power switch.
7. Adjust the machine or replace the gauges (unless otherwise specified) after turning OFF the power switch.
8. For the machine equipped with a cloth cutting knife, keep your hands away from the blade tip of the knife.
9. Take care not to allow your hand to be caught in the work clamp and the carriage unit while the machine is in operation.
10. For the machine provided with a stacker unit, keep your hands away from the stacker while the machine is in operation. Take out the finished sewing products from the stacker in the procedure specified.
11. Operating the "button feeding switch," "step-operation switch," or "button discharging switch" on the feeder panel actuates the spinner oscillating arm. In this case, keep your fingers away from the spinner oscillating arm path.
12. Carefully tilt/raise the machine, when necessary, after having turned OFF the power switch.
13. If no button is placed on the button clamp jaw lever when turning ON the power switch, the spinner oscillating arm will actuate. Keep your fingers away from the spinner oscillating arm path when turning ON the power switch.
14. So as to improve efficiency in operation, needle(s) can be threaded by operating the Needle threading switch located on the operation panel while the machine is energized. To ensure safety, however, it is recommended to turn OFF the power switch to allow the machine to enter not-energized state before threading the needle. The feeding frame switch located on the operation panel electrically prevent the machine from operating. If the electric control mechanism fails, dangers such that the sewing machine rotates may arise.



1. To ensure safety, never operate the machine with the ground wire for the power supply removed.
2. When tilting the machine head, exercise care not to allow your fingers etc. to be caught under the machine head.
3. Before inserting/removing the power plug, the power switch has to be turned OFF in advance.
4. In time of thunder and lightening, stop your work and disconnect the power plug from the receptacle so as to ensure safety.
5. For the machine of which table stand has casters, operate the machine with its casters fixed.
6. Do not allow the power cord to trail on the floor.
7. For the machine that operates by compressed air, securely connect the joint in place before turning ON the power to the machine.
8. Caution must be taken not to allow thread wastes, cloth chips and dust to accumulate on the control box.
9. The motor is completely silent when the machine is at rest. So, attention has to be paid not to forget to turn OFF the power to the machine after the termination of work.
10. If it is necessary to suddenly stop the machine while it is in operation, press the pause switch.
11. Permissible fluctuation of the supply voltage is within $\pm 10\%$ of the rating.
12. Abrupt fluctuation of the supply voltage may stop the machine.
13. If an excessive current is applied to the power line or electromagnetic induction is generated by the solenoid or other parts of the machine, the machine may malfunction.

CONTENTS

I. GENERAL	1
1. FEATURES	1
2. SPECIFICATIONS	1
3. CAUTION TO BE TAKEN DURING SEWING	1
II. NAME OF EACH COMPONENT	2
III. PREPARATION	3
1. INSTALLING THE DEVICE	3
2. INSTALLING THE THREAD STAND	3
3. CONNECTING THE PEDAL	3
4. LUBRICATION	4
5. REMOVING/LOADING THE BOBBIN CASE	4
6. LOADING THE BOBBIN	4
7. THREADING THE MACHINE HEAD	4
IV. MACHINE OPERATION	5
1. OPERATION PANEL	5
2. OPERATION PREPARATION	6
3. INPUTTING AND CONFIRMING DATA	7
4. OPERATION	15
5. ERROR MESSAGES AND THE RESET PROCEDURE	17
6. SWITCHES IN THE PANEL BOX AND CONTROL BOX	22
7. AUTOMATIC BUTTON FEEDER (BR22)	27
V. REPLACEMENT	29
1. REPLACING THE BUTTON CARRIER	29
2. REPLACING THE WORK ATTACHMENT	29
3. REPLACING THE FEED PLATE AND POSITIONING IT	30
4. REPLACING THE SET PIN	30
VI. ADJUSTMENTS	31
1. ADJUSTING THE BUTTON FEEDER	31
2. ADJUSTING THE ATTACHMENTS IN THE FEEDER BOWL	31
3. ADJUSTING THE FEED PLATE OF THE INDEX UNIT	33
4. ADJUSTING THE SEWING SIZE	33
5. POSITIONING THE MARKING LIGHT	34
6. ADJUSTING THE POSITION OF THE ORIGIN	35
VII. CHECKING THE AIR PRESSURE	35
VIII. AIR DIAGRAM	36
IX. OPTIONAL PARTS	37
X. TROUBLES AND CORRECTIVE MEASURES IN BUTTON SEWING	38

I. GENERAL

1. FEATURES

- 1) The machine is capable of efficiently sewing buttons with consistency only by setting a sleeve at the predetermined position on the machine.
- 2) The number of buttons to be sewn and the button intervals can be set with ease by means of the microcomputer control.
- 3) The machine enables the unskilled operator to operate it with ease. This can be expressed in such a way that the machine replaces the skilled operator.
- 4) The cloth feeding mechanism is accurately controlled by a stepping motor.
- 5) A marking lamp enables the machine to sew buttons in accordance with sham buttonholes.

2. SPECIFICATIONS

- 1) Machine head: LK-1851-555/AC2H Exclusive intermediate machine head
LK-1852-557/AC2H Exclusive intermediate machine head
- 2) Process: Attaching buttons on sleeves (standard : $\phi 15$ buttons)
- 3) Sewing speed: 2,000 s.p.m. ("normal" or "maximum")
- 4) Needle: DP \times 17 #14
- 5) Thread: Spun thread #30 to 50
Cotton thread #30 to 50
- 6) Needle thread tension: 150 to 200 g
- 7) Bobbin thread tension: 10 to 30 g
- 8) Sewing size: Length 0 to 3.5 mm, width 3.5 mm
- 9) Range of applicable buttons: Shape Flat buttons (round-shaped) (Buttons that have no dent on the right side are to be excluded)
Size $\phi 13$ to $\phi 15$ mm standard $\phi 15$ mm
(Contour)
Thickness 1.8 to 3.5 mm
Number of holes in the button 4
30 to 90 mm
- 10) Sewing range: 30 to 90 mm
- 11) Number of buttons that can be set: 1 to 5 pcs. (For $\phi 15$ mm buttons, the number of buttons will be 4.)
- 12) Adjustment of button position: Possible to be adjusted in increments of 1 mm.
- 13) Positioning of buttons: With a marking light
- 14) Lift of the work clamp: 10 to 11 mm
- 15) Thread knot making mechanism: Provided
- 16) Cross-over stitches: Buttons are constantly attached "without cross-over stitches."
- 17) Power consumption: 600 VA (within "supply voltage $\pm 10\%$ ")
- 18) Air pressure: 0.5 MPa to 0.55 MPa (5 kgf/cm² to 5.5 kgf/cm²)
- 19) Weight: 145 kg
- 20) Dimensions: 1,200mm(W) \times 720mm(L) \times 1270mm(H) (Excluding thread stand unit)
- 21) Power supply: • 200V, 220V, 380V, 415V, 440V 3-phase 50Hz/60Hz
• 200V, 240V Single-phase 50Hz/60Hz
- 22) Noise: Workplace-related noise at sewing speed
 $n=2,000\text{min}^{-1}$: $L_{PA} \leq 82\text{db(A)}$
Noise measurement according to DIN 45635-48-B-1.

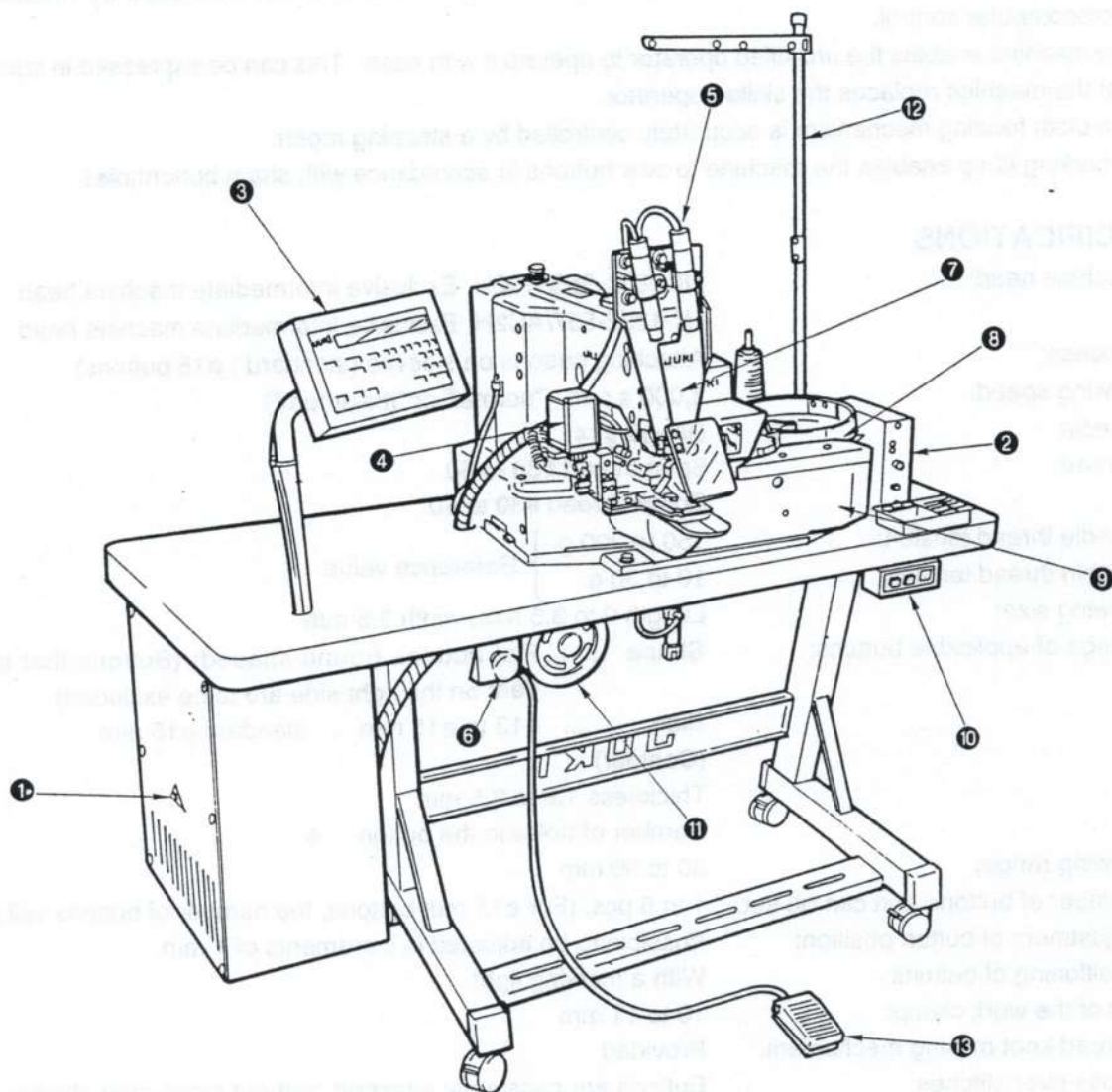
3. CAUTION TO BE TAKEN DURING SEWING

If the bobbin thread used is thinner than the needle thread, seam on the wrong side of the material will be neatly finished. Use the thread of which type and count are shown in the table below.

Needle thread	Spun #30	Spun #40
Bobbin thread	Spun #40	Spun #50

(Caution) Use the same color thread for both needle thread and bobbin thread.

II. NAME OF EACH COMPONENT



- | | |
|---------------------|---------------------------|
| ① Control box | ⑦ Machine head |
| ② Feeder controller | ⑧ Button feeder |
| ③ Operation panel | ⑨ Button supplying device |
| ④ Stepping motor | ⑩ Power switch |
| ⑤ Marking light | ⑪ Machine motor |
| ⑥ Pause switch | ⑫ Thread stand unit |
| | ⑬ Pedal switch |

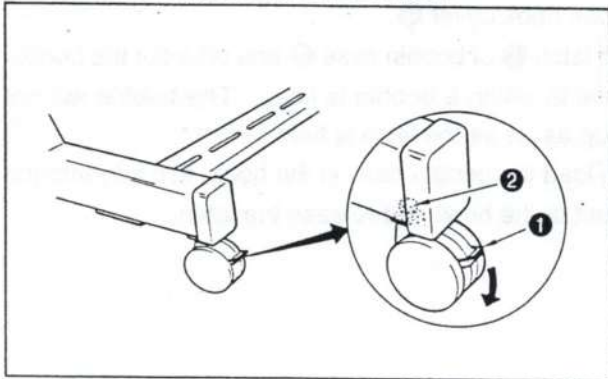
III. PREPARATION



To avoid malfunction and damage of the machine, confirm the following.

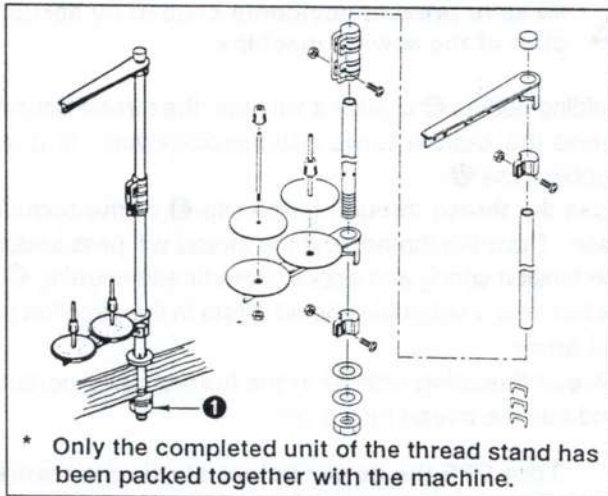
- Before you put the machine into operation for the first time after the set-up, clean it thoroughly.
- Remove all dust gathering during transportation and oil it well.
- Confirm that the voltage has been correctly set.
- Confirm that the power plug has been properly connected to the power supply.
- Never use the machine in the state where the voltage type is different from the designated one.
- Confirm the correct rotational direction of the motor pulley.

1. INSTALLING THE DEVICE



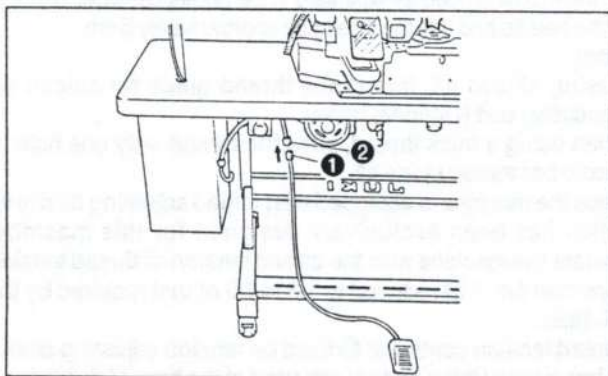
- 1) Securely fix the device in place moving brakes **1** of the four outside casters provided with a brake in the direction of the arrow.
- 2) If the floor on which the device is to be installed is not flat and smooth, loosen nuts **2** and adjust the height of the device properly and firmly tighten the nuts.

2. INSTALLING THE THREAD STAND



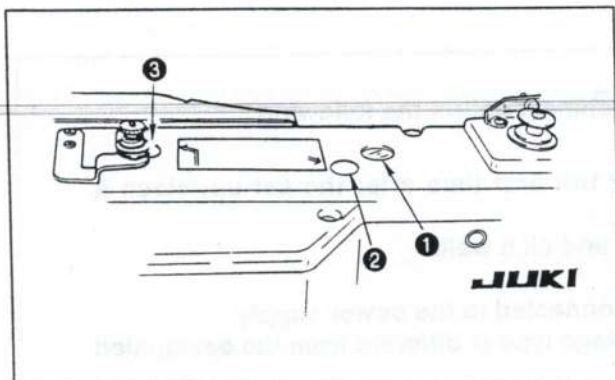
- 1) Assemble the thread stand unit and attach the assembly in the hole in the table.
- 2) Tighten locknut **1** so that it secures the thread stand assembly.

3. CONNECTING THE PEDAL



- 1) Connect the pedal cord connector **1** to connector **2** installed on the underside of the table.

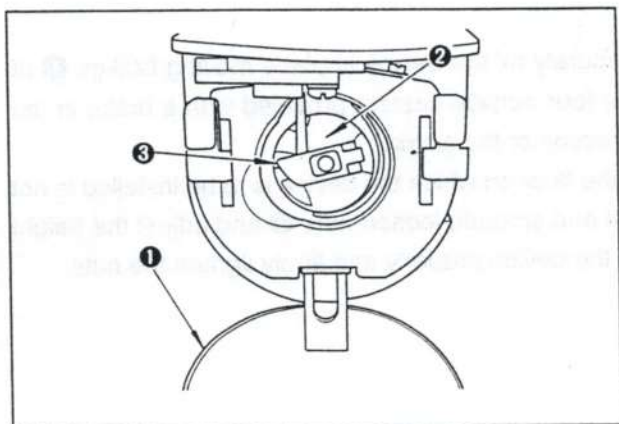
4. LUBRICATION



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Remove rubber plugs ①, ②, ③ and apply an adequate amount of oil to the machine once a day.
- 2) Use JUKI New Defrix Oil No. 2.

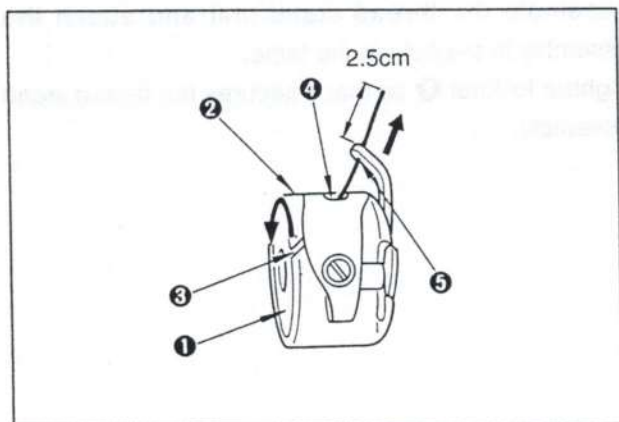
5. REMOVING/LOADING THE BOBBIN CASE



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Open hook cover ①.
- 2) Lift latch ③ of bobbin case ② and take out the bobbin case in which a bobbin is fitted. The bobbin will not drop as far as the latch is held raised.
- 3) To load the bobbin case in the hook, fit it fully into the shaft of the hook and release the latch.

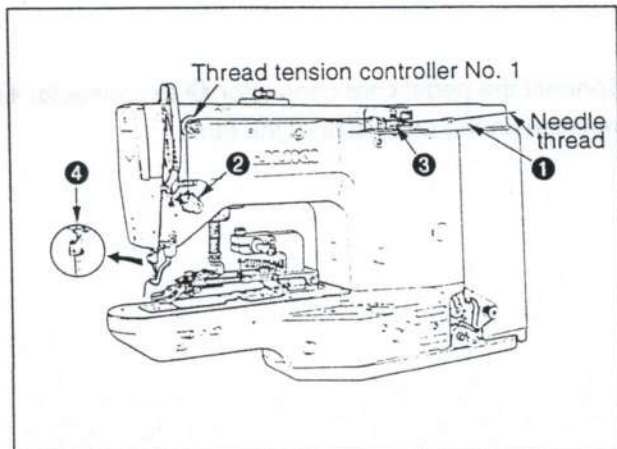
6. LOADING THE BOBBIN



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Holding bobbin ① in such a way that the thread wound round the bobbin turns counterclockwise, fit it in bobbin case ②.
- 2) Pass the thread through guide slip ③ of the bobbin case. Draw the thread, and the thread will pass under the tension spring and appear from thread opening ④. At this time, the bobbin should rotate in the direction of the arrow.
- 3) Thread threading hole ⑤ in the horn-shaped portion and trail the thread by 2.5 cm.

7. THREADING THE MACHINE HEAD



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

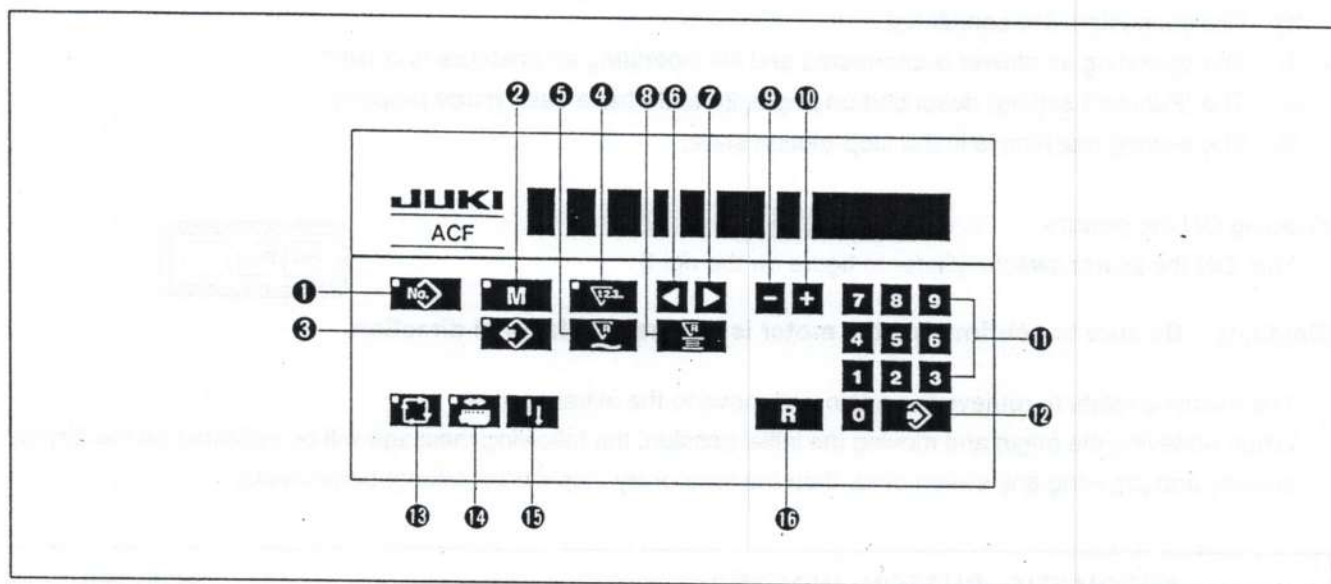
Thread the machine head as illustrated in the numerical order. Finally, thread the needle and trail the thread by approximately 5 cm.

(Caution)

1. If using silicon oil, thread the thread guide for silicon oil lubricating unit (Optional parts).
2. When using a thick thread, pass the thread only one hole in needle bar thread guide ④.
3. Since the machine is equipped with thread adjusting device ① which has been exclusively designed for this machine, operate the machine with the thread tension of thread tension controller No. 2 ② reduced to 1/3 to 2/3 of that required by the LK-1850.
4. Thread tension controller ③ fixed on tension adjusting device ① has already been factory-adjusted at the time of delivery, so do not change its setting.

IV. MACHINE OPERATION

1. OPERATION PANEL



No.	Switch name	Function and operation
1	Memory No. selector switch	Used to select the memory number.
2	Sewing data input switch	Used to input the data for the number of buttons or button intervals.
3	Sewing data check switch	Used to check the data for the number of buttons or button intervals.
4	Counter setting switch	Used to input numbers for sleeve counter or the bobbin thread counter.
5	Sleeve counter clear switch	Used to clear the number counted by the sleeve counter.
6	Back switch	Used to return the current screen display or to shift the carriage to the left under the manual operation mode.
7	Forward switch	Used to forward the current screen display or to shift the carriage to the right under the manual operation mode.
8	Bobbin thread counter clear switch	Used to clear the number counted by the bobbin thread counter.
9	Minus (reduction) switch	Used to reduce numbers when inputting data.
10	Plus (addition) switch	Used to add numbers when inputting data.
11	Number switch (numeric keys)	Used to specify numbers when inputting data.
12	Entry key	Used to enter numeric data.
13	Automatic operation selecting switch	Used to select automatic operation.
14	Carriage travel switch	Used to move the carriage in the manual operation mode or independent operation mode.
15	Sewing machine start switch	Used to actuate the sewing machine independently.
16	Reset switch	Used to clear an error message on the display, and reset the machine.

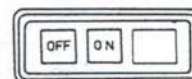
2. OPERATION PREPARATION

Be sure to check the following before turning ON the power switch.

- 1) The machine is supplied with an adequate amount of machine oil.
- 2) The power connector is properly connected and the voltage is correct.
- 3) The connectors are connected.
- 4) The operating air blower is connected and the operating air pressure is correct.
- 5) The "Function setting" described on pages 23 to 26 have been made properly.
- 6) The sewing machine is in the stop-motion state.

<Turning ON the power>

Turn ON the power switch. (Refer to figure on the right)



(Caution) Be sure to confirm that the motor is in normal rotational direction.

The machine starts to retrieve the origin and move to the initial position.

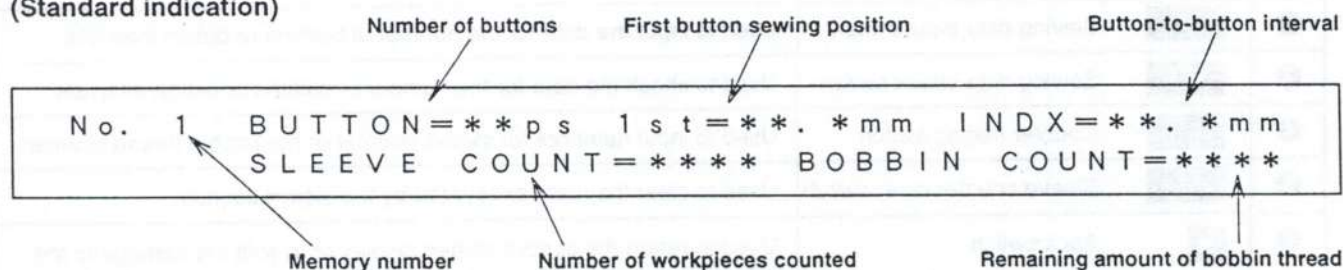
When retrieving the origin and moving the initial position, the following message will be indicated on the display screen, and pressing any switch other than the temporary stop switch will not be possible.

AUTOMATIC BUTTON INDEXER

ACF-286
JUKI Corporation

When the machine completes the initial operation after the origin has been retrieved, the standard screen of the memory number that was called before turning OFF the power to the machine will appear on the display screen.

(Standard indication)



The asterisks (*) on the display screen show the spaces where the specified numbers or characters required for the sewing operation are to be input.

(Note) When an error message is indicated on the display screen (the display screen will be in red), the machine will not retrieve the origin carry out the initial performance until the error is cleared (the error mode is released). Refer to pages 17 to 21 as to how to clear the error.

Upon completion of the above procedure, "Inputting and confirming data" or "changing the operation" can be started. These operation procedures using the panel switches are possible only when the following conditions are satisfied.

- The machine is ready to run in the automatic operation mode or in the independent operation mode. (See pages 15 and 16 about automatic operation and independent operation.)
- The standard indication appears on the display screen. (No error message is indicated on the screen.)

3. INPUTTING AND CONFIRMING DATA

(1) Memory number selection

Used to call up the sewing pattern data stored in a memory number other than that on the display screen.

(Example) How to select memory No. "2".

1)

```
No. 1    BUTTON = 3 p s 1 s t = 3 5 . 0 m m    I N D X = 2 5 . 0 m m
        S L E E V E   C O U N T =          0    B O B B I N   C O U N T = 4 0 0
```

Press  so that the LED lights up. ()

2)

```
..... No.  SELECT .....
                                M E M O R Y   N o . =      2
```

Input the desired memory number (2).

3)

```
No. 2    BUTTON = 3 p s 1 s t = 3 0 . 0 m m    I N D X = 1 5 . 0 m m
        S L E E V E   C O U N T =          0    B O B B I N   C O U N T = 4 0 0
```

The details of specified pattern No. "2".

* The following switches are valid when inputting data.



Increase the number specified.

 R

Return to the previous number.



Reduce the number specified.



Delete the input data.

(Note) Numbers "1 to 11" can be specified.

If a number other than one of the above is specified, the error message shown below will be indicated for three seconds, and then the screen display will return to give indication 2).

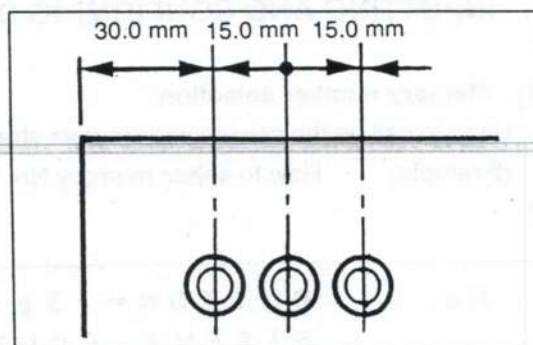
```
0 0    * * * * *   D A T A   I N P U T   E R R O R   * * * * *
        F R O M   1   T O   1 1
```


(2) Sewing from the input data

Input the data required for sewing.

(Example)

- Number of buttons: 3
- Position of the 1st button: 30.0 mm
- Button intervals: 15.0 mm
- Cross-over stitch: Without cross-over stitch
- The designated number under which is to be stored: No.2



The data input procedure is as follows:

1)

```
No. 1    BUTTON = 3 p s    1 s t = 3 5 . 0 m m    I N D X = 2 5 . 0 m m
        S L E E V E   C O U N T =      0    B O B B I N   C O U N T = 4 0 0
```

Any previous data stored under memory number "1" will be shown on the display screen. When there is no data stored under the specified memory number, asterisks (**) will be shown on the display screen.

Press **M** so that the LED lights up and then the data input mode will be shown on the display screen.
(**M**)

2)

```
No. 1    . . . . . DATA INPUT . . . . .
        B U T T O N   N U M . = 3 p s
```

Input the number of buttons (3 pcs.)

3 **↵**

3)

```
No. 1    . . . . . DATA INPUT . . . . .
        1 s t   B U T T O N   P O S . = 3 0 . 0 m m
```

Input the "distance for jump" from the material set position to the 1st button (30.0 mm).

3 **0** **0** **↵**

The distance for jump can be specified in 0.1 mm increments.

4)

```
No. 1    . . . . . DATA INPUT . . . . .
        B U T T O N   I N D E X   = 1 5 . 0 m m
```

Input the distance (15.0 mm) between button and button.

1 **5** **0** **↵**

The button intervals can be specified in 0.1 mm increments.

If you know that seam shrinkage will occur because of the material used, be sure to input the distance data properly adjusted to allow for the shrinkage.

5) DATA INPUT

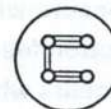
CROSS OVER STITCH = OFF

Specify the "without cross-over stitches."

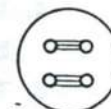
- or **+**  (ON = With cross-over stitches, OFF = Without cross-over stitches)

The "without cross-over stitches" has been specified as standard at the time of deliver. To select the "with cross-over stitches," re-adjust the LK-1851-555 machine head.

If the finished material shrinks because of the nature of the material, appropriately change the input number to eliminate the error.



With cross-over stitches



Without cross-over stitches

6) N o . S E L E C T

MEMORY N o . = 2

Input the memory number (2) under which the data is to be stored. (Memory number can be specified as desired in the range of 1 to 9.)

2 

7)

N o . 2 B U T T O N = 3 p s 1 s t = 3 0 . 0 m m I N D X = 2 0 . 0 m m

The details of the previous data under the memory number designated in step 6) will flash on and off.

Press  again when the newly input data is to be stored instead of the previous data.

(If other data is to be input, press **R** to return the display screen to step 6).)



8)

N o . 2 B U T T O N = 3 p s 1 s t = 3 0 . 0 m m I N D X = 1 5 . 0 m m
S L E E V E C O U N T = 0 B O B B I N C O U N T = 4 0 0

The newly input data is stored under memory number "2".

This completes the input procedure. (The previous data remains stored under memory number "1".)

* The following switch operations are valid when inputting data.

- | | | | |
|---|--|----------|----------------------------------|
| + | The number specified is increased. | R | The previous number is restored. |
| - | The number specified is reduced. | M | The input data is deleted. |
|  | The previous indication display is restored. | | |
|  | The indication display is scrolled forward. | | |

- (Caution) 1. The number of button that can be input in step 2) is "1 to 5." If any number other than these, the relevant error will appear on the screen for three seconds. In this case, re-input an appropriate value.
2. The same occurs when the feed amount other than "30.0 mm to 90.0 mm" has been input in step 3).
3. The same occurs when the button interval other than "10.0 mm to 60.0 mm" has been input in step 4).
4. The same occurs when the total of the position of the first button input in step 3) and the button-to-button feeding amount input in step 4) exceeds 90 mm.
5. The same occurs when a number other than "1 to 9" has been specified in step 6).

Error indicating screen

00	***** DATA INPUT ERROR *****
<div></div>	

Comment related to errors



(3) Checking the sewing data

The details of the sewing data stored under the designated memory number are shown on the display screen.
(At this time, data input is not possible.)

(Example) Machine operation to check the details of the data stored in memory in "(2) Sewing from the input data."

1)

No. 2 B U T T O N = 3 p s 1 s t = 3 0 . 0 m m I N D X = 1 5 . 0 m m
S L E E V E C O U N T = 0 B O B B I N C O U N T = 4 0 0

Press  so that the LED lights up. ()

2)

B U T T N (p s) 0 — — — — — 1 — — — — — 2 — — — — — 3 — — — — — * — — — — — *
I N D X (m m) 3 0 . 0 1 5 . 0 1 5 . 0 * * . * * * . *

Position of the 1st button and the intervals from the 1st button through to the 5th button are shown on the display screen.



3)

C R O S S O V E R S T I T C H = O F F

With/without cross-over stitches is shown on the display screen. (ON = With cross-over stitches, OFF = Without cross-over stitches)

4)

No. 2 B U T T O N = 3 p s 1 s t = 3 0 . 0 m m I N D X = 1 5 . 0 m m
S L E E V E C O U N T = 0 B O B B I N C O U N T = 4 0 0

The display screen returns to the standard screen.

(Caution) The following switches are valid when checking the details of data.



The previous indication display is restored.



The data entered is canceled.

(4) Counter settings

Set the initial values for the sleeve counter and the bobbin thread counter.

Sleeve counter: The counter adds one (1) to the current value after one sleeve is finished.

Bobbin thread counter: The counter subtracts one (1) from the current value after a button is finished.

(Example)

The initial value for the sleeve counter: 0

(The counter starts counting from the 1st sleeve finished.)

The initial value for the bobbin thread counter: 400

(Four hundred pieces of buttons can be sewn. Under the automatic operation mode, the machine automatically stops after 80 pieces of sleeves each of which has five buttons are completed. If sewing sleeves each of which has three buttons, the machine automatically stops after 133 pieces of sleeves ($3 \times 133 = 399$) while leaving the bobbin thread for sewing one piece of button.)

1)

No. 1 BUTTON = 3 p s 1 s t = 35.0 mm INDX = 25.0 mm
SLEEVE COUNT = 0 BOBBIN COUNT = 400

Press  so that the LED lights up. ()

2)

..... DATA INPUT
SLEEVE COUNTER = 0

Input the initial value for the sleeve counter.

3)

..... DATA INPUT
BOBBIN COUNTER = 400

Input the initial value for the bobbin thread counter.


4)



No. 1 BUTTON = 3 p s 1 s t = 35.0 mm INDX = 25.0 mm
SLEEVE COUNT = 0 BOBBIN COUNT = 400

This completes the data input for the counter settings.

* The following switch operations are valid when inputting data.

- | | |
|--|--|
|  Increase the number specified. |  The previous indication display is restored. |
|  Decrease the number specified. |  The indication display is scrolled forward. |
|  Return to the previous number. |  Delete the input data. |

Note that pressing this switch while the initial value for the bobbin thread counter is being input as described in step 3) enters the initial value for the sleeve counter input in step 2). To only change the initial value for the sleeve counter during sewing, press the switch  before step 3).

- * The initial value "0" for the sleeve counter can be set by pressing  switch (only when the machine is in the standby position.)
- * The bobbin thread counter can be returned to the initial value (set value) also by pressing the  switch. (Only when the machine is in the standby position.)

(5) Selecting the test sewing mode



The test sewing mode is used to operate the machine independently.

Call the memory number (10), and the operation mode will be changed over to the test sewing mode.

(Example) Operation to be taken to change over the operation mode to the test sewing mode

1)

No. 1 B U T T O N = 3 p s 1 s t = 3 5 . 0 m m I N D X = 2 5 . 0 m m
S L E E V E C O U N T = 0 B O B B I N C O U N T = 4 0 0

Press  to light up the LED. ()

2)

..... N o . S E L E C T
M E M O R Y N o . = 1 0

Input the desired memory No. "10."


  

3)

N o . 1 0 T E S T S E W M O D E
P l e a s e s t a r t S W O N

The screen corresponding to the memory number specified and the LED goes out.

(Explanation of performance)

- ① Select the test sewing mode, and the work clamp will come down, move to the intermediate position and enter the standby state.
- ② The button clamp jaw lever goes up/comes down by operating the work clamp lowering switch.
- ③ The machine performs a sewing cycle regardless of the existence of a button on the machine by operating the start switch.
- ④ To terminate the test sewing mode, select any other number using the memory No. selector switch .

(6) Selecting the adjustment mode

This mode is used only when the machine needs adjustment with the power to the machine turned ON.



Note that, however, the power to the machine has to be turned OFF when adjusting any hazardous part of the machine. JUKI assumes no responsibility for any personal injury occurring during adjustment works.

Call the memory No. "11," and the operation mode will change over to the adjustment mode.

(Example) Operation to be taken to change over the operation mode to the adjustment mode

1)

No. 1	BUTTON =	3 p s	1 s t =	3 5 . 0 mm	I N D X =	2 5 . 0 mm
	S L E E V E C O U N T =		0	B O B B I N C O U N T =		4 0 0

Press  to light up the LED. ()

2)

.....	No. SELECT
		MEMORY No. = 11

Input the desired memory No. "11."



  

3)

No. 10	SETTING MODE
		Please start setting.	

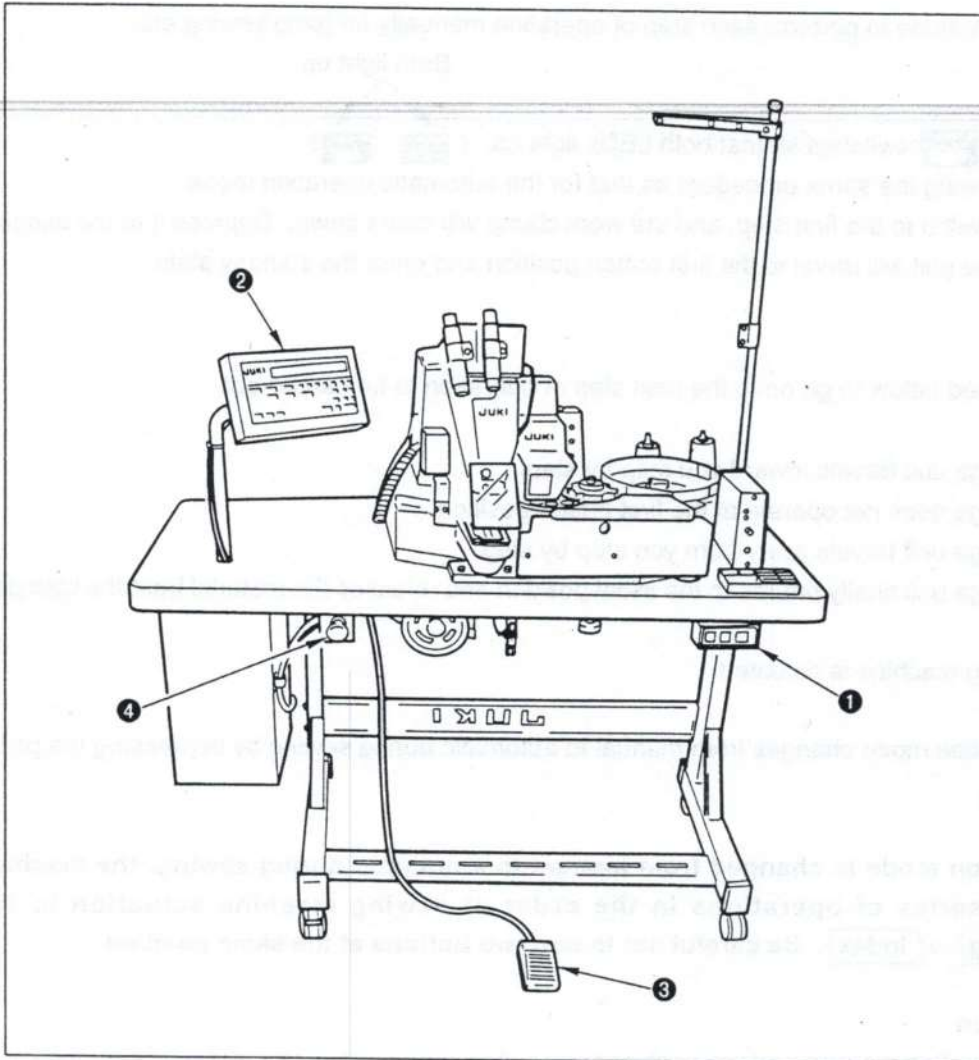
The screen corresponding to the memory number specified and the LED goes out.

(Explanation of performance)

- ① Select the test sewing mode, and the work clamp will come down, move to the intermediate position and enter the standby state.
- ② Adjust the parts in need of adjustment. Under the adjustment mode, the switches other than the memory number switch () are inoperative. The stepping motor is not energized under the adjustment mode and can be moved back or forth by hand.
- ③ To terminate the adjustment mode, select any other number using the memory No. selector switch .

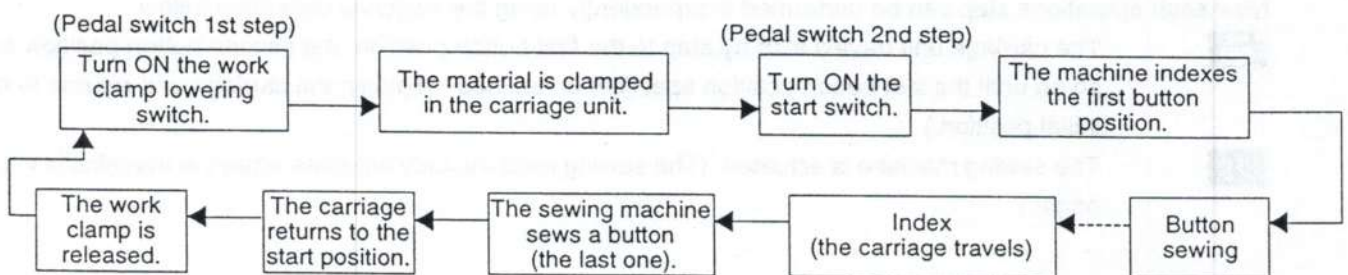
4. OPERATION

- ① Power switch
- ② Operation panel
- ③ Pedal switch
- ④ Pause switch






(1) Automatic operation

When the pedal switch is treaded, the following series of operation will be performed automatically.



[Operation]

- 1) Press the  switch on the operation panel to light up the LED. ( )
- 2) Correctly place the material on the carriage board.
- 3) Depress pedal switch ③ to the first step, and the work clamp will come down. Depress it to the second step, and the sewing machine will start.
- * If you release pedal switch ③ before depressing it to the second step, the work clamp will go up and the start of the machine will be reset.

Lights up Goes out





(2) Manual operation

Use the manual operation mode to perform each step of operation manually for jump sewing etc.




Both light up



[How to operate]

- 1) Press the  and  switches so that both LEDs light up. ( )
- 2) Set the material following the same procedure as that for the automatic operation mode.
- 3) Depress the pedal switch to the first step, and the work clamp will come down. Depress it to the second step, and the carriage unit will travel to the first button position and enter the standby state.

Use the switches described below to go on to the next step of operation to be carried out.

-  : The carriage unit travels toward you step by step.
The carriage does not operate at the first button position.
-  : The carriage unit travels away from you step by step.
The carriage unit finally returns to the initial position and releases the material from the clamped state.
-  : The sewing machine is actuated.

Pedal switch: The operation mode changes from manual to automatic during sewing by depressing the pedal switch.

(Caution) If the operation mode is changed from manual to automatic during sewing, the machine performs a series of operations in the order of sewing machine actuation to the **Button sewing** → **Index**. Be careful not to sew two buttons at the same position.

(3) Independent operation

Use the independent operation mode to perform each operation step independently for trial sewing or the check the carriage travel.



Both go out



[Operation]

Operate switches  and  so that both LEDs go out. ( )

Now each operations step can be performed independently using the switches described below.

-  : The carriage unit travels step by step to the first button position, the second button position and so on until the last button position specified is reached. (Finally, the carriage unit returns to the initial position.)
-  : The sewing machine is actuated. (The sewing machine only actuates when the machine is in the origin.)

(4) Stop

When the pause switch is pressed while the machine is in operation, the following message will be shown on the display screen of the operation panel and the machine will stop.

***** P A U S E *****
C H E C K → R E S E T → S T A R T

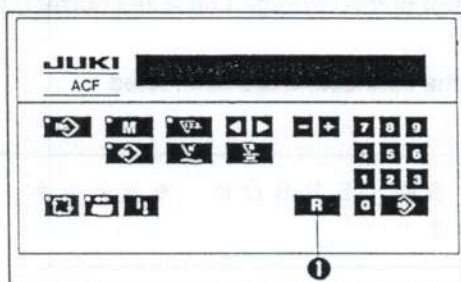
The operation process where the pause switch is pressed determines when and how the operation is stopped or how the reset is performed (how the machine is released from the stop state).

- 1) When the pause switch is pressed when sewing button.
The sewing machine stops after the button sewing is finished.
Press the **R** switch, and the machine operation mode will automatically change to the manual.
- 2) When the pause switch is pressed when the carriage is moving (indexing).
The sewing machine stops as soon as the switch is pressed.
Press the **R** switch, and the carriage will automatically return to the sewing start position of the 1st button and the machine operation mode will be changed to the manual operation mode.
- 3) If the pause switch is pressed while the carriage is returning to the home position after the completion of the sewing of the last button, the machine will stop immediately after the switch is pressed.
When the **R** switch is pressed, the carriage will automatically return to the initial position. This completes the machine stop performance.

5. ERROR MESSAGES AND THE RESET PROCEDURE

1)

0 1 ***** B O B B I N T H R E A D E R R O R *****
B O B B I N C H A N G E → R E S R T → S T A R T



Cause:

If the amount of bobbin thread remaining on the bobbin is insufficient (when the set value on the bobbin thread counter reaches zero (0) or the amount of bobbin thread is not enough to complete a sleeve), the above error message will be shown on the display.

How to reset: Replace the bobbin with another one that is fully wound with thread. Then, press **R** switch ①.

2)

0 2 ***** R A M B A C K U P E R R O R *****
R E S E T → D A T A I N P U T

Cause: If the data stored in RAM has been deleted, the above message will be shown on the display screen.

How to reset: Press **R** switch ①, and re-input the data.

3)

0 3 * * * * * I N D E X D A T A E R R O R * * * * *
R E S E T → D A T A I N P U T

Cause: If the automatic operation mode or the manual operation mode is selected when data input is not correct, the above message will be shown on the display screen.

How to reset: Press **R** switch ①, and re-input the data.

4)

0 4 * * * * * S T A R T S W I T C H O N E R R O R * * * * *
S T A R T S W I T C H O F F → R E S E T → S T A R T

Cause: If the start switch is in the depressed state when turning ON the power switch, the above message will be shown on the display screen.

How to reset: Release your foot from the start switch and press **R** switch ①.

5)

0 5 * * * * * C A M P O S I T I O N E R R O R * * * * *
C H E C K → R E S E T → S T A R T

Cause: If the cam of the sewing machine is not in the origin, the above message will be shown on the display screen.

How to reset: Turn OFF the power to the machine. Then turn the pulley by hand until the cam is moved to the origin.

(Caution) If the DIP switch has been set to the “2-holed button” position, this error detecting function is not operative. (See page 24.)

6)

0 6 * S T E P P I N G M O T O R M I S S S T E P E R R O R *
P O W E R O F F → C H E C K

Cause: If the stepping motor steps out and the feeding amount of the carriage unit is not correct, the above message will be shown on the display screen.

How to reset: Turn OFF the power to the machine, and check how the connectors are connected.

7)

0 7 * * * * * I N I T P O S I T I O N S W E R R O R * * * * *
C H E C K → R E S E T → S T A R T

Cause: If the origin detecting switch is inoperative, the above message will be shown on the display screen.

How to reset: Check the origin detecting switch.

8)

0 8 * * * * * M A C H I N E R E E O R * * * * *
P O W E R O F F → C H E C K

Cause: If transmission/receiving of signals between CPU circuit board (on the device) and the I/O circuit board (on the machine head and the BR) is not properly performed, the above message will be shown on the display screen.

How to reset: Turn OFF the power to the machine, and check connectors between the circuit boards for failed contact.

9)

0 9 * * * * * N E E D L E T H R E A D E R R O R * * * * *
N E E D L E T H R E A D S E T → R E S E T → S T A R T

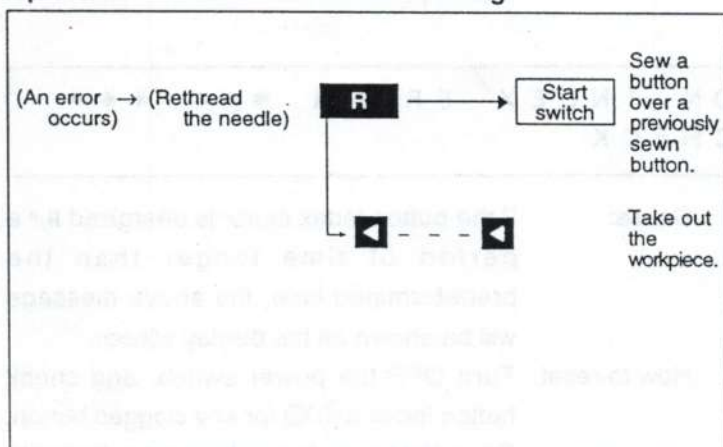
Cause: If the needle thread breaks, the above message will be shown on the display screen.

How to reset: 1. Even if thread breakage or thread slip-off occurs during sewing, the machine will continue to sew and will finish the button.

2. Rethread the needle, and then press reset switch **R** on the panel.
(See page 4 for how to thread the machine head.)

(Caution) Be sure not to press the reset switch before rethreading the needle. It may be dangerous if the sewing machine is actuated.

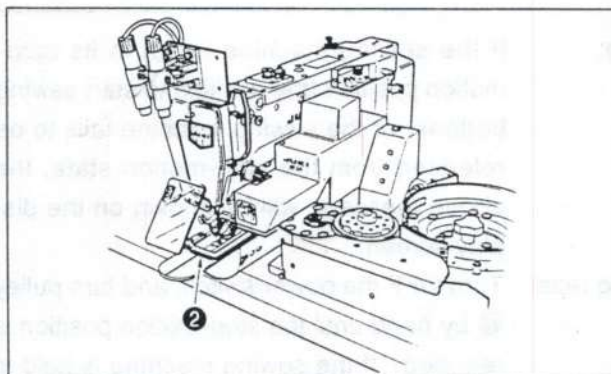
Operation at the time of thread breakage



3. If you need to sew a button over a button previously sewn, run the sewing machine in the automatic sewing mode (press the pedal) or in the manual sewing mode (press the sewing machine start switch **I** on the panel).

10)

1 0 * * M A C H I N E C L A M P P O S I T I O N E R R O R * *
C L A M P C H E C K → R E S E T → S T A R T

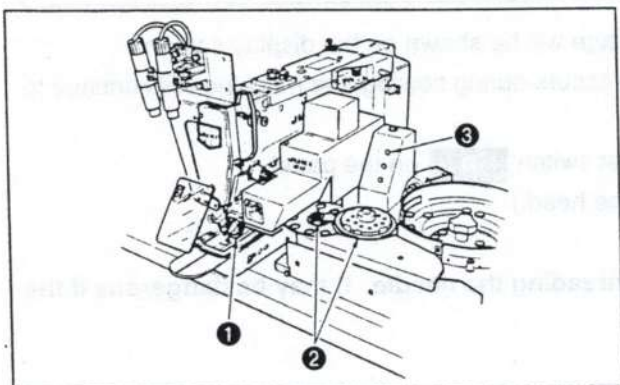


Cause: If the work clamp of the sewing machine is not correct, the above message will be shown on the display screen.

How to reset: Lift work clamp **2** of the sewing machine by hand, then press **R** switch **1**.

11)

1 1 ***** BUTTON FEED ERROR *****
LOADER SWITCH ON → RESET → START

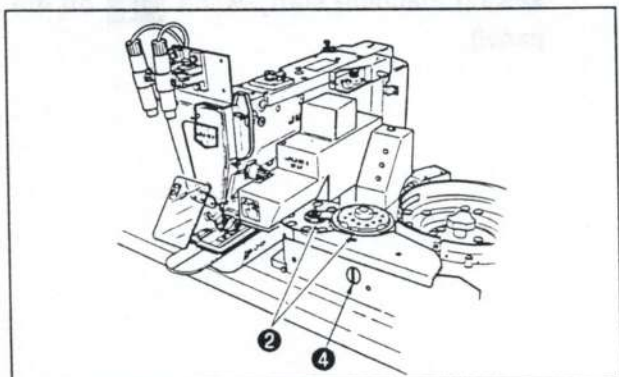


Cause: If no button is fed to button clamp jaw lever **①**, the above message will be shown on the display screen.

How to reset: Confirm that buttons are fed to index unit **②**. Then, press button feeding switch **③**.

12)

1 2 ***** BUTTON INDEX ERROR *****
POWER OFF → CHECK

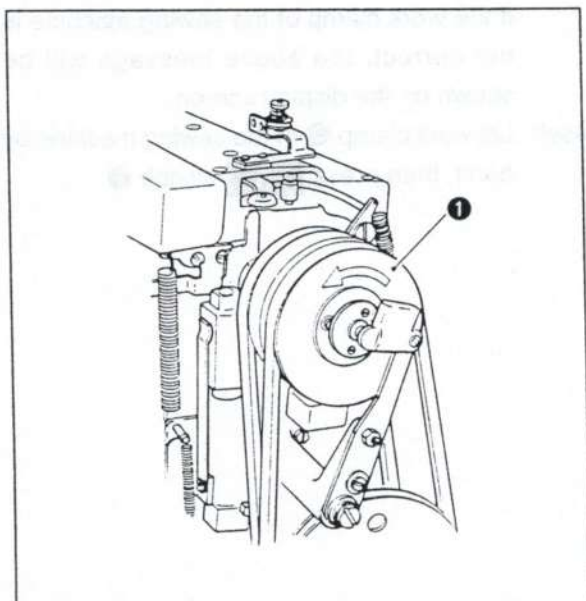


Cause: If the button index motor is energized for a period of time longer than the predetermined time, the above message will be shown on the display screen.

How to reset: Turn OFF the power switch, and check button index unit **②** for any clogged button. Give three or four clockwise turns to manual screw **④** using a screddriver until you have confirmed that **②** would not turn any further.

13)

1 3 *** STOP MOTION POSITION ERROR ***
POWER OFF → CHECK

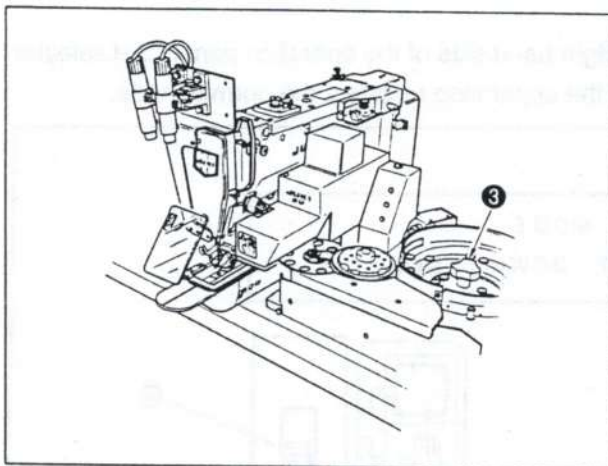


Cause: If the sewing machine is not in its stop-motion position (the position to start sewing buttons) or the sewing machine fails to be released from the stop-motion state, the above message will be shown on the display screen.

How to reset: Turn OFF the power switch, and turn pulley **①** by hand until the stop-motion position is reached. If the sewing machine is held in the stop-motion position, check the components of the stop-motion mechanism.

14)

1 4 *** B U T T O N S E N S I N G O V E R E R R O R ***
C H E C K → R E S E T → P O S . C H E C K → S T A R T



Cause: If a button is not detected after the index unit has continuously performed the button sensing by ten times or more, the above message will be shown on the display screen.

How to reset: Check parts feeder ③ for its correct performance, and adjust so that buttons are fed to the index unit properly.

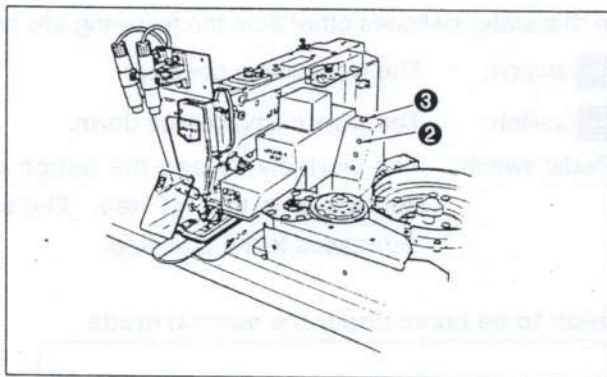
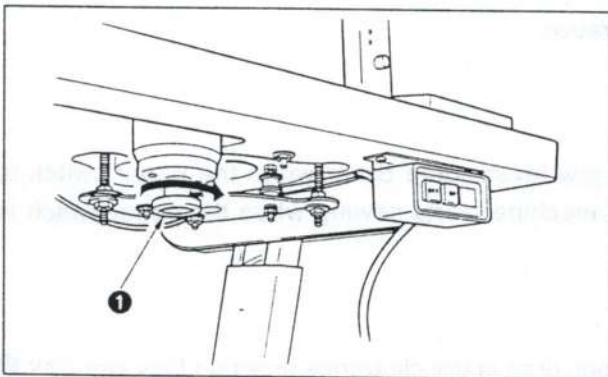
(Caution) After the resetting procedure, check the sewing position to prevent the machine from sewing on buttons.

15)

1 5 ***** R E V O L U T I O N A R M E R R O R *****
P O W E R O F F → C H E C K

Cause: If the spinner oscillating arm motor is energized for a period of time longer than the predetermined time or it is not in its origin, the above message will be shown on the display screen.

How to reset: Turn OFF the power switch. Then turn arm motor knob ① and check the spinner oscillating arm unit for any clogged button. (The normal rotational direction is the direction of the arrow.) If breaker ③ is not in its set position, press the push-button to set breaker ③. If the arm is not in its origin, press button feeding switch ②.



16)

1 6 ***** B U T T O N S E T E R R O R *****
C H E C K → R E S E T → S T A R T

Cause: If the button cannot be set on the spinner oscillating arm even after the fine positioning of button has been performed twice, the above message will be shown on the display screen.
(See page 25 for how to select the fine positioning detecting function.)

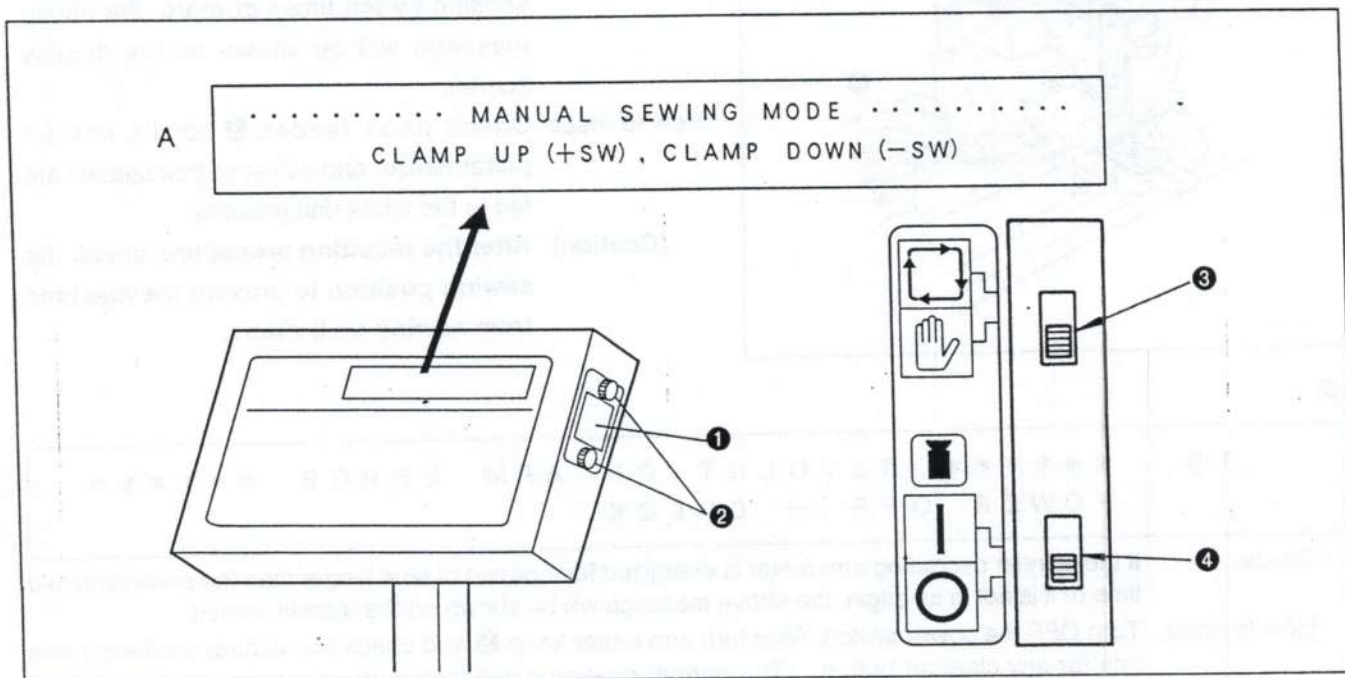
How to reset: Check the fine positioning unit. If it is not defective, press **R** switch ① and feed buttons using the button feeding switch.

6. SWITCHES IN THE PANEL BOX AND CONTROL BOX

(1) Switches in the panel box

(1)-1. Selecting the normal mode and the manual mode

Loosen screw ②, and open switch cover ① locating on the right-hand side of the operation panel. Set selector switch ③ to the lower side to select the manual mode or to the upper side to select the normal mode.



When the manual mode is specified, the message on the display panel will change as A, the carriage unit travels to the intermediate position and enters the standby state.

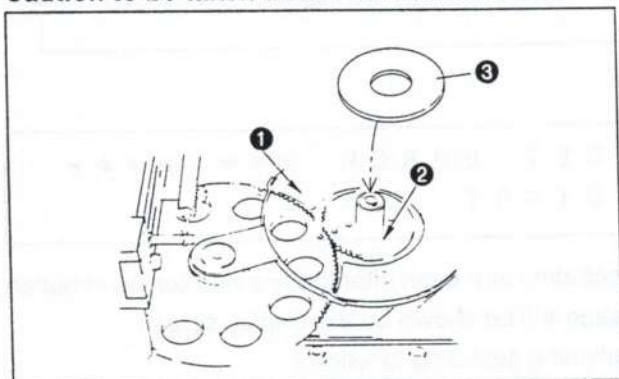
In this state, switches other than the following are not operative.

+ switch: The work clamp goes up.

- switch: The work clamp comes down.

Pedal switch: The work clamp and the button clamp jaw lever come down when the pedal switch is depressed to the 1st step. The sewing machine starts sewing when the pedal switch is depressed to the 2nd step.

Caution to be taken under the manual mode



If buttons drop in the clearance provided between disk ① and pinion gear ② when setting buttons, a sewing machine trouble may result. It is therefore necessary to prepare a piece of part such as ③ from cardboard and use it so as to prevent buttons from dropping in the clearance.

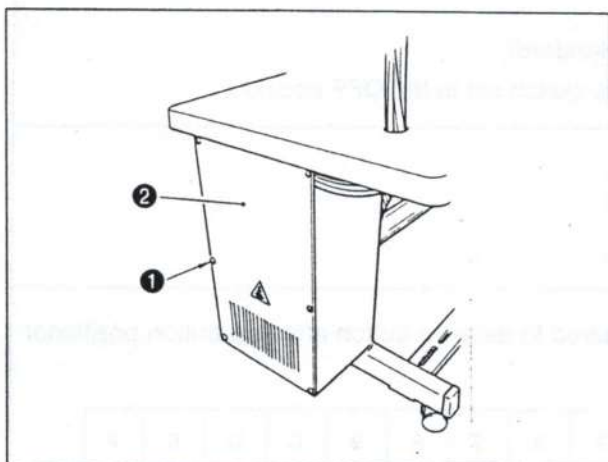
(1)-2. Selecting ON/OFF of the parts feeder

Loosen screw ②, and open switch cover ① locating on the right-hand side of the operation panel. Set selector switch ④ to the lower side to set the parts feeder to the OFF state or to the upper side to set the parts feeder to the ON state.

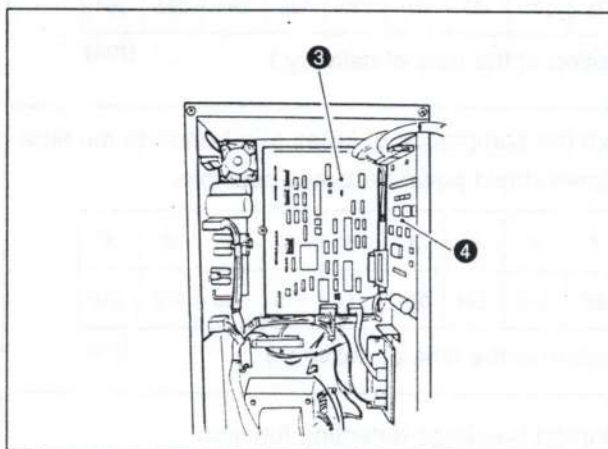
(2) Switches in the control box



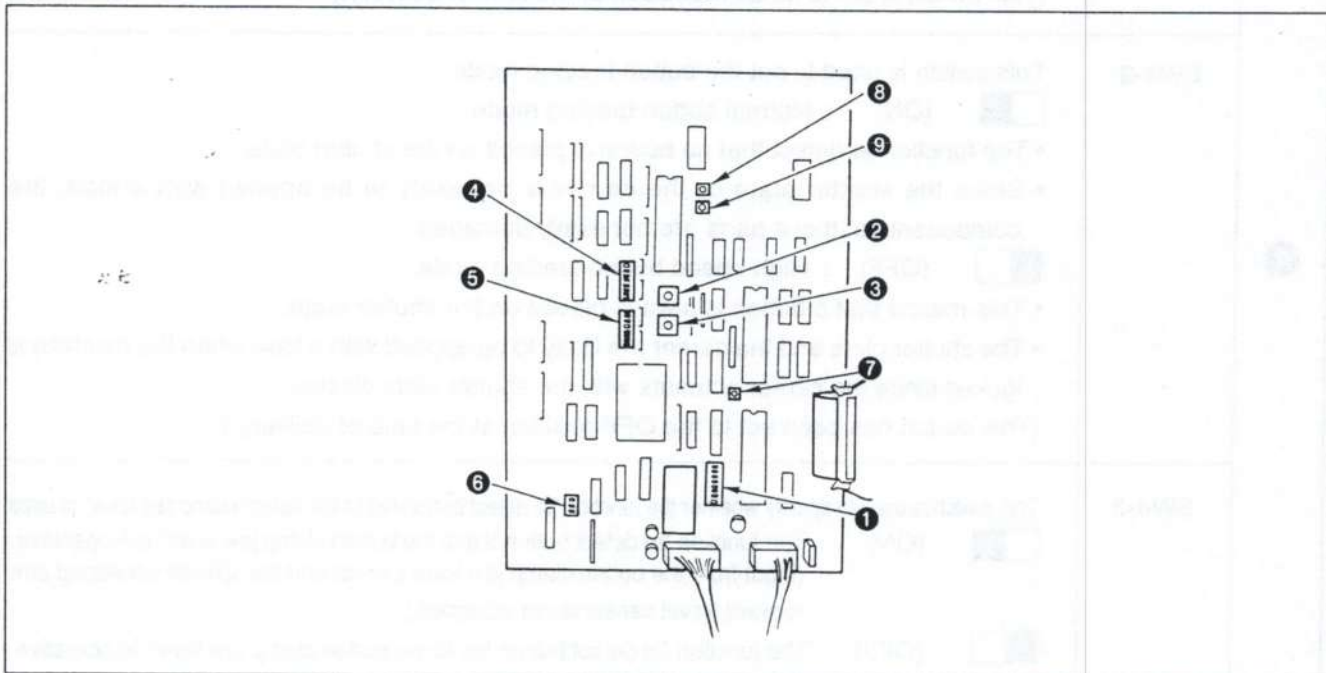
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.










Remove six screws **1** from the control box mounted on the underside of the table and open cover **2**. Now, the function can be changed over using switches mounted on I/O circuit board **3** and CPU circuit board **4**.



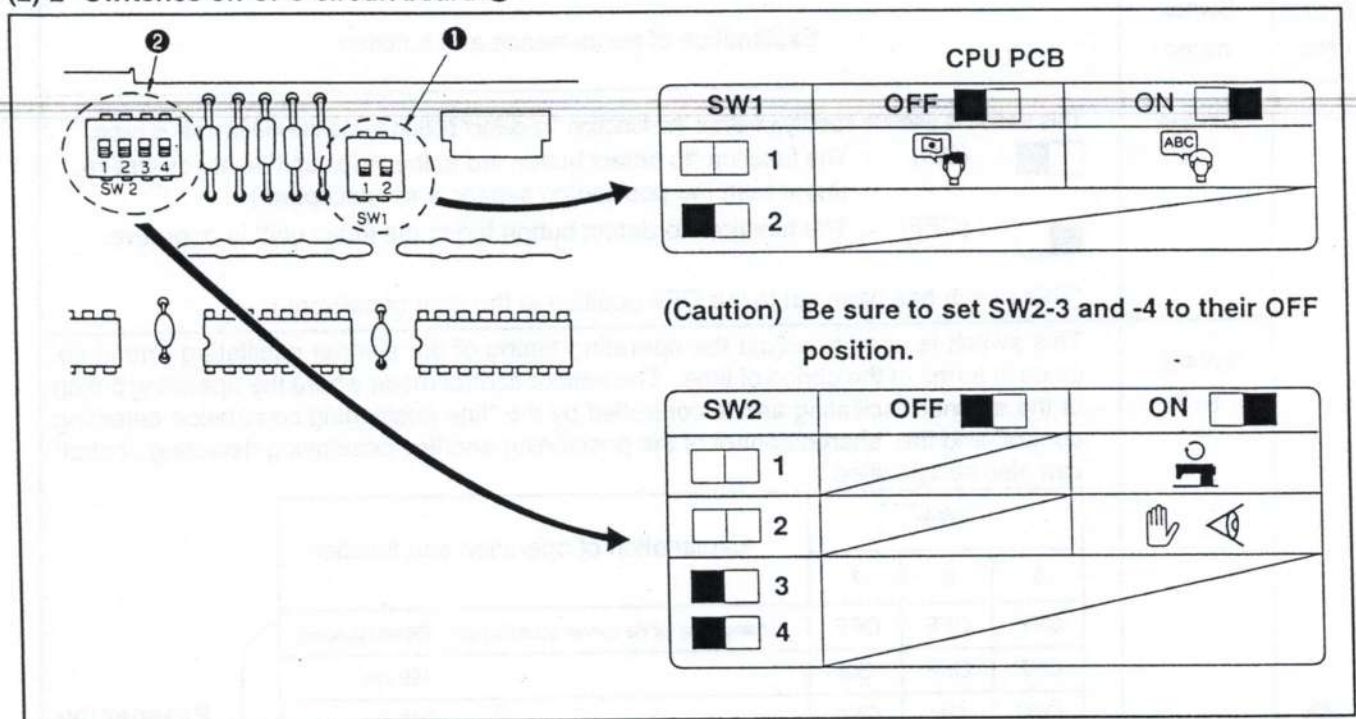
(2)-1. Explanation of the switches on I/O circuit board **3**



Switch No.	Switch name	Explanation of performance and function																																
①	SW1-1	This switch is used to specify the number of holes in button. (ON) : 2-holed buttons (OFF) : 4-holed buttons (Standard) Normally, operate the machine with this switch set to the OFF position.																																
	SW1-2 } SW1-7	This switch is inoperative.																																
②	SW2	This switch is used to set the time required to detect a button after the button positioner (triple pawl) has been actuated. <table><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>52</td><td>64</td><td>74</td><td>86</td><td>96</td><td>106</td><td>118</td><td>128</td><td>138</td><td>150</td><td>160</td><td>170</td><td>182</td><td>192</td><td>202</td><td>204</td></tr></table> (This switch has been set to its "5" position at the time of delivery.) (ms)	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	52	64	74	86	96	106	118	128	138	150	160	170	182	192	202	204
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F																			
52	64	74	86	96	106	118	128	138	150	160	170	182	192	202	204																			
③	I/O circuit board SW-3	This switch is used to set the time from the completion of index of a button to the time when the actuation of the button positioner (triple pawl) becomes possible. <table><tr><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>A</td><td>B</td><td>C</td><td>D</td><td>E</td><td>F</td></tr><tr><td>6</td><td>96</td><td>188</td><td>278</td><td>368</td><td>458</td><td>510</td><td>52</td><td>142</td><td>234</td><td>324</td><td>414</td><td>510</td><td>510</td><td>510</td><td>510</td></tr></table> (This switch has been set to its "1" position at the time of delivery.) (ms)	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F	6	96	188	278	368	458	510	52	142	234	324	414	510	510	510	510
0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F																			
6	96	188	278	368	458	510	52	142	234	324	414	510	510	510	510																			
④	SW4-1	This switch is used to set the needle thread breakage detecting function.  (ON) : The needle thread breakage detecting function does not work.  (OFF) : The needle thread breakage detecting function is set to work. (This switch is set to its OFF position at the time of delivery.)																																
	SW4-2	This switch is used to set the button feeding mode.  (ON) : Normal button feeding mode • The function to detect that no button is placed on the shutter plate. • Since the shutter plate or the carrier is not likely to be applied with a load, the components of those parts are not easily damaged.  (OFF) : High-speed button feeding mode • This means that a button is always placed on the shutter plate. • The shutter plate and the carrier are likely to be applied with a load when the machine is locked since the carrier actuates with the shutter plate closed. (This switch has been set to the OFF position at the time of delivery.)																																
	SW4-3	This switch is used to specify whether the function "to detect button fed to the button clamp jaw lever" is used.  (ON) : The function "to detect button fed to the button clamp jaw lever" is inoperative. (Input from the button clamp jaw lever sensor and the spinner oscillating arm forward travel sensor is not accepted.)  (OFF) : The function "to detect button fed to the button clamp jaw lever" is operative. (This switch has been set to the OFF position at the time of delivery.)																																

Switch No.	Switch name	Explanation of performance and function																																							
4	SW4-4	<p>This switch is used to specify whether the function "to detect button fed to the index unit" is used.</p> <p><input type="checkbox"/> (ON) : The function "to detect button fed to the index unit" is not operative. (Input from the positioning sensor is not accepted.)</p> <p><input checked="" type="checkbox"/> (OFF) : The function "to detect button fed to the index unit" is operative.</p> <p>(This switch has been set to the OFF position at the time of delivery.)</p>																																							
	SW4-5, 6, 7	<p>This switch is used to adjust the operating timing of the spinner oscillating arm in six steps in terms of the period of time. The sensor control mode where the operating timing of the spinner oscillating arm is controlled by the "fine positioning completion detecting control" and the "shared control of the positioning and fine positioning detecting control" can also be specified.</p> <table><thead><tr><th colspan="3">SW4-<input type="checkbox"/></th><th rowspan="2">Explanation of operation and function</th></tr><tr><th>5</th><th>6</th><th>7</th></tr></thead><tbody><tr><td>OFF</td><td>OFF</td><td>OFF</td><td>Latency time for the spinner oscillating arm 290 ms (standard)</td></tr><tr><td>OFF</td><td>OFF</td><td>ON</td><td>190 ms</td></tr><tr><td>OFF</td><td>ON</td><td>OFF</td><td>390 ms</td></tr><tr><td>OFF</td><td>ON</td><td>ON</td><td>490 ms</td></tr><tr><td>ON</td><td>OFF</td><td>OFF</td><td>590 ms</td></tr><tr><td>ON</td><td>OFF</td><td>ON</td><td>690 ms</td></tr><tr><td>ON</td><td>ON</td><td>OFF</td><td>Fine positioning completion detecting control (Fine positioning completion switch is required.)</td></tr><tr><td>ON</td><td>ON</td><td>ON</td><td>Shared control of the positioning and fine positioning detection</td></tr></tbody></table> <p>(The switches have been set to the standard value at the time of delivery.)</p>	SW4- <input type="checkbox"/>			Explanation of operation and function	5	6	7	OFF	OFF	OFF	Latency time for the spinner oscillating arm 290 ms (standard)	OFF	OFF	ON	190 ms	OFF	ON	OFF	390 ms	OFF	ON	ON	490 ms	ON	OFF	OFF	590 ms	ON	OFF	ON	690 ms	ON	ON	OFF	Fine positioning completion detecting control (Fine positioning completion switch is required.)	ON	ON	ON	Shared control of the positioning and fine positioning detection
	SW4- <input type="checkbox"/>			Explanation of operation and function																																					
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ON	OFF	ON	690 ms																																						
ON	ON	OFF	Fine positioning completion detecting control (Fine positioning completion switch is required.)																																						
ON	ON	ON	Shared control of the positioning and fine positioning detection																																						
SW4-8	<p>This switch is used to select the troubleshooting function.</p> <p><input type="checkbox"/> (ON) : Troubleshooting mode is selected. (Also set DIP SW2-2 on the CPU circuit board to the ON position.)</p> <p><input checked="" type="checkbox"/> (OFF) : Normal operation mode is selected.</p> <p>(This switch has been set to the OFF position at the time of delivery.)</p>																																								
5	SW5-1, 2, 3	This switch is inoperative.																																							
6	SW6-1, 2, 3	This switch is inoperative.																																							
7	VR1	<p>This variable resistor is inoperative.</p> <p>Set this switch to the minimum value.</p>																																							
8	VR2	<p>This variable resistor is used to set the lowering pressure (speed) of the fine positioner lowering solenoid. Turning this variable resistor clockwise lowers the lowering pressure (speed). Normally, set the variable resistor to "5 to 6."</p> <div>5</div>																																							
9	VR3	<p>This variable resistor is inoperative.</p> <p>Set this switch to the maximum value.</p>																																							

(2)-2 Switches on CPU circuit board ④

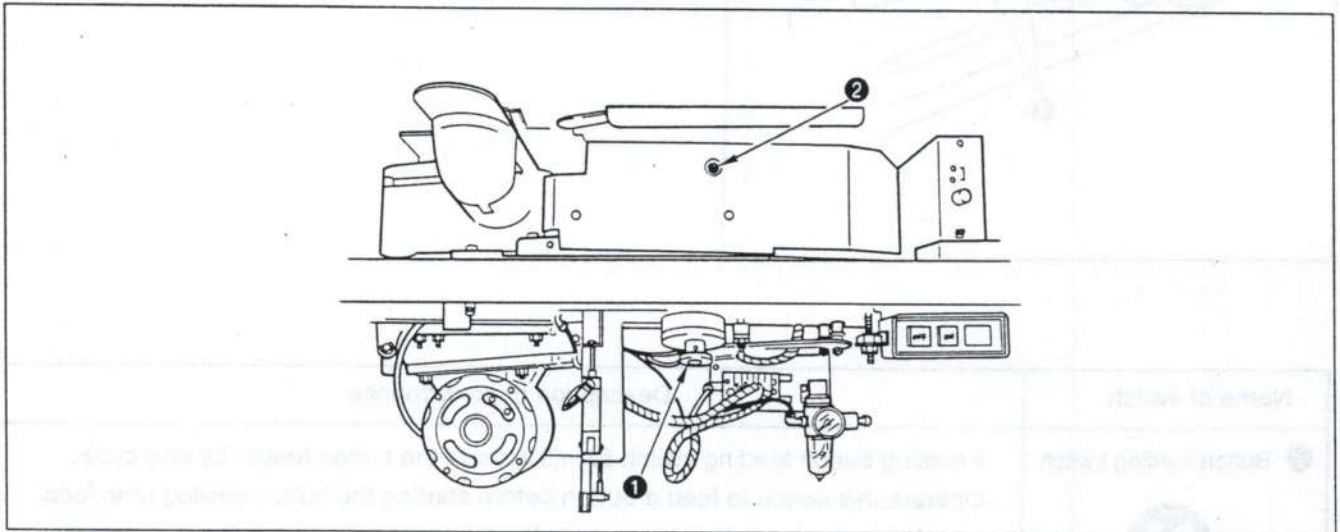


Switch No.	Switch name	Function
①	SW1-1	<p>This switch is used to switchover the characters indicated on the display screen from/to Japanese/English.</p> <p>English (ON) : The characters are indicated in English.</p> <p>Japanese (OFF) : The characters are indicated in Japanese.</p> <p>(This switch is set to its ON position at the time of delivery.)</p>
	SW1-2	This switch is inoperative.
②	SW2-1	<p>This switch is used to select the automatic repeating operation of the device.</p> <p> (ON) : The device operates under the automatic repeating operation mode.</p> <p> (OFF) : The device operates under the normal operation mode.</p> <p>(This switch has been set to the OFF position at the time of delivery.)</p>
	SW2-2	<p>This switch is used to select the troubleshooting function.</p> <p> (ON) : The troubleshooting mode is selected.</p> <p>(Also set DIP SW4-8 on the I/O circuit board to the ON position.)</p> <p> (OFF) : The normal operation mode is selected.</p> <p>(This switch has been set to the OFF position at the time of delivery.)</p>

7. AUTOMATIC BUTTON FEEDER (BR22)

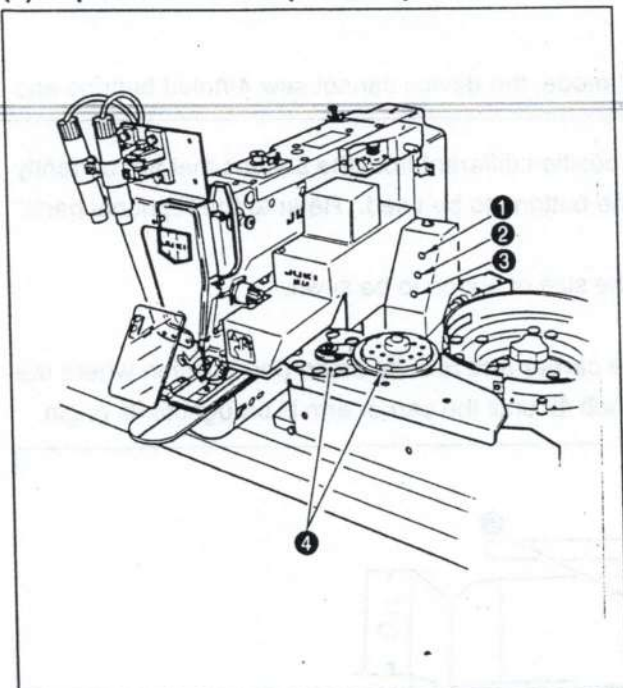
(1) Cautions to be taken

1. When the device is set to the "2-holed button sewing" mode, the device cannot sew 4-holed buttons and vice versa. Be careful when starting sewing buttons.
2. When using buttons of which holes are located at the position different from the buttons that are currently being used, select and use the carrier pin matching the buttons to be used. Refer to the "optional parts" (page 37) of the button carriers.
3. Position the individual feed plate in accordance with the size of button to be sewn.
4. Use only buttons specified for the device.
5. Before tilting the machine, be sure to confirm that the carrier arm is in its origin (the position where the button position is determined). If not, turn arm motor knob ❶ until the carrier arm is brought to its origin.






6. If an error occurs during sewing, the machine will stop running upon completion of the sewing. In this case, the work clamp will be kept lowered. So, press the Reset switch to release the work clamp before you taking out the material from the machine. If the work clamp is not released by pressing the reset switch, be sure to raise the work clamp by hand.
7. If tightening screws too firmly in the resin when adjusting the height of the adjusting plate, or feed plate etc., resin breakage may occur. So be careful.
8. Apply grease on the worm gear and cam periodically (every six months.)
9. The work attachment comes in two different types, the standard type and the large-button type (optionally available). Whenever you have replaced the work attachment, be sure to adjust the fine positioning completion switch.
10. If a button clogs in the index unit, turn first manual rotating shaft ❷ counterclockwise using a screwdriver until it is released.
11. Sensitivity of the button feeder is very delicate, so be sure to adjust it carefully.
12. Connect the connectors while checking the correct direction of the respective connectors.

(2) Operation of the operation panel of the feeder

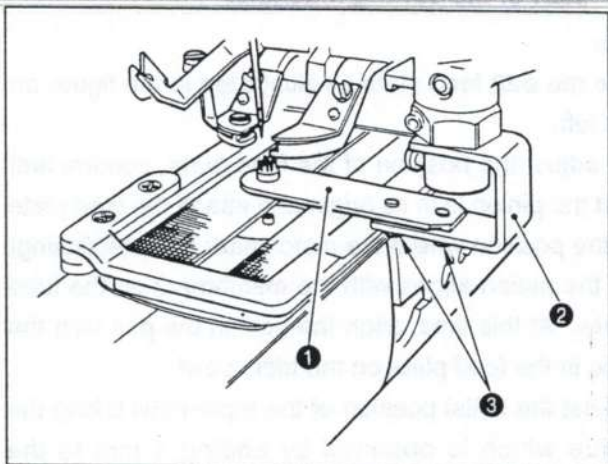


(Caution) Be sure to set the operation mode to the independent operation mode on the operation panel whenever adjusting the button feeder components. (See page 16)

Name of switch	Description of performance
1 Button feeding switch 	Pressing button feeding switch 1 will actuate the button feeder by one cycle. Operate this switch to feed a button before starting the button sewing or to feed one during sewing in the case where the button is not properly fed.
2 Step-operation switch 	Each time step-operation switch 2 is pressed, the spinner oscillating arm performs a step of operation. If the switch is kept pressed, the spinner oscillating arm continuously performs operation steps. To return the spinner oscillating arm to its origin before completion of the series of operations, press button feeding switch 1 . This will automatically returns the spinner oscillating arm to its origin.
3 Button discharging switch 	Pressing button discharging switch 3 will make the machine enter the operation mode under which buttons in index section 4 of the button feeder are automatically discharged. In this case, the buttons are discharged to the discharging chute located at the lower part of the fine position section. So, place a pan or the like to receive the discharged buttons at the exit area. At this time, the spinner oscillating arm is actuated. So keep your hand away from the work clamp unit until the button discharging motion completes.

V. REPLACEMENT

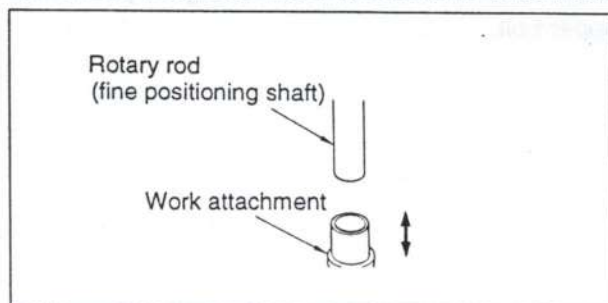
1. REPLACING THE BUTTON CARRIER



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Button carrier **1** is fixed on spinner oscillating arm **2** using two countersunk head screws **3**.
- 2) Turn the spinner oscillating arm motor knob (see **1** on page 27) in the normal direction of rotation to turn the spinner oscillating arm by 90° and replace the button carrier.

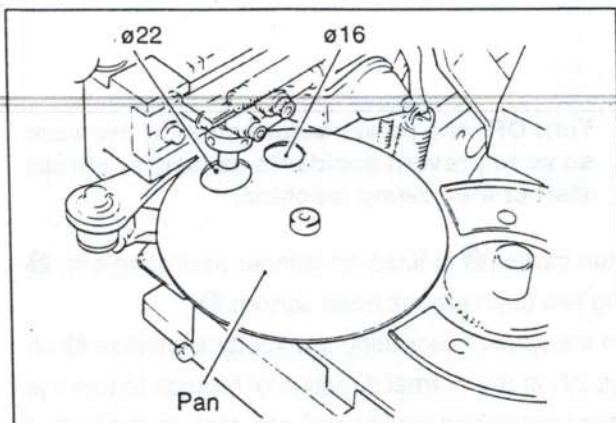
2. REPLACING THE WORK ATTACHMENT



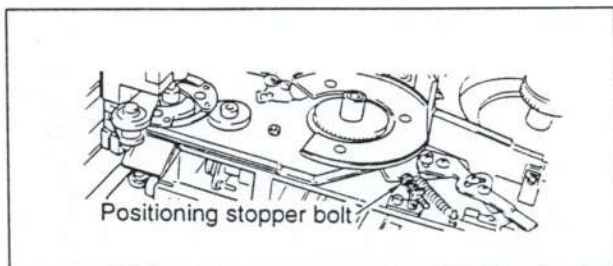
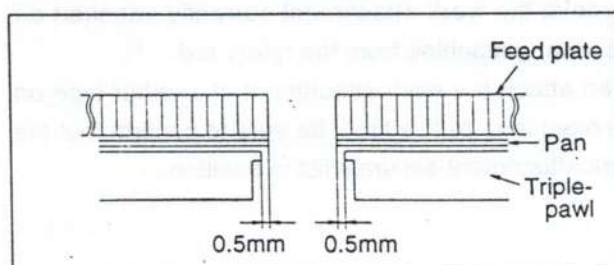
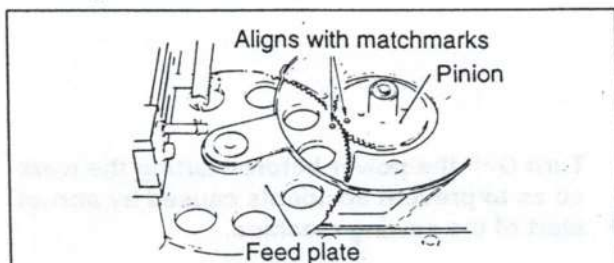
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Remove the work attachment currently attached on the sewing machine from the rotary rod.
- 2) Then attach the work attachment of another type on the machine. At this time, be sure to confirm that the work attachment securely fits in position.

3. REPLACING THE FEED PLATE AND POSITIONING IT



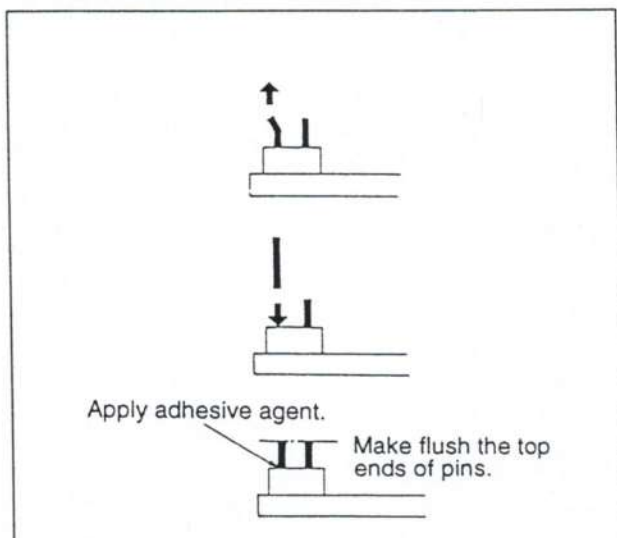
* A ø16 feed plate is also applicable by turning the pan over.



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

- 1) Pan
Use the ø22 feed plate as illustrated in the figure on the left.
- 2) To adjust the position of the feed plate, confirm first that the pinion is in its origin and attach the feed plate at the position where the matchmark (countersinking) on the pinion aligns with the matchmark on the feed plate. At this time, align the hole in the pan with the hole in the feed plate on the triple pawl.
- 3) Adjust the initial position of the triple-pawl taking the value which is obtained by adding 1 mm to the diameter of the button hole in the feed plate used as reference. Make the adjustment using the positioning stopper bolt.

4. REPLACING THE SET PIN



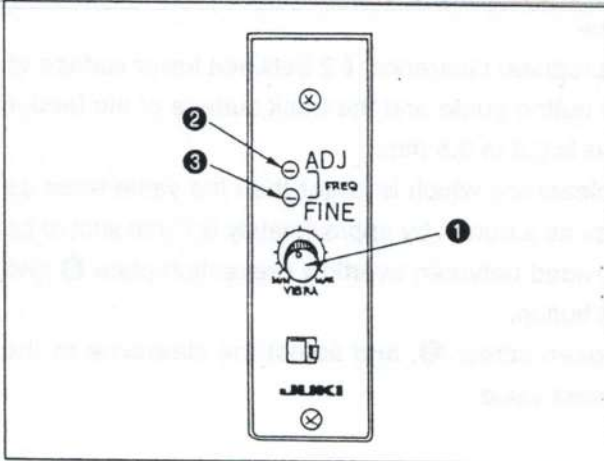
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

If the set pins of the button carrier bend or break, replace it with a set pin (4-holed, ø1.0) supplied with the unit following the procedure described below.

- 1) Pull out the set pin with a pair of pliers to be replaced.
If the set pin will not come off, drive the set pin out from the wrong side using a broken needle or the like.
- 2) Insert a set pin that matches the button carrier.
(Drill it perpendicularly in the receiving base.)
If the hole has been expanded, reinforce the hole with adhesive agent (ARON ALPHA, CEMEDINE#3000 or LOCKTITE). In this case, carefully wipe off oil gathering on the set pin and the hole in the receiving base with thinner or benzene. Dry them up for five minutes or more. Then, drive the set pin in the base and apply adhesive agent.

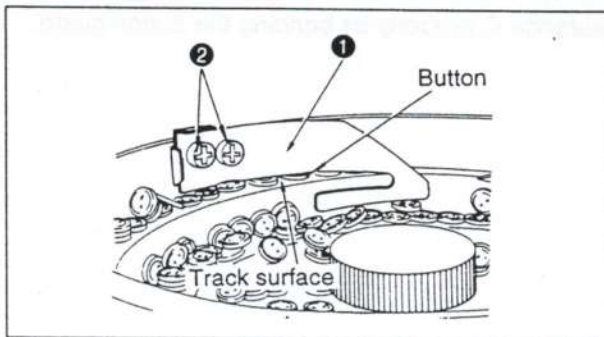
VI. ADJUSTMENTS

1. ADJUSTING THE BUTTON FEEDER



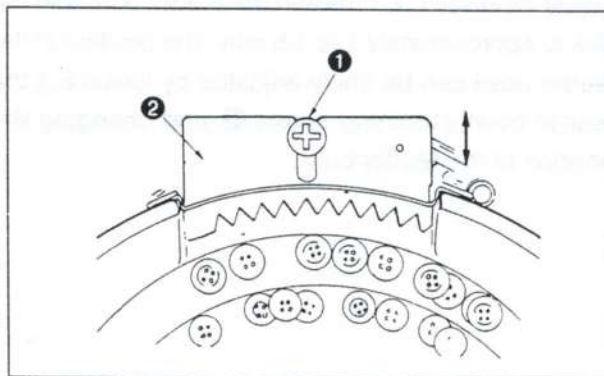
- 1) Set the button feeder adjusting variable resistor **1** to its intermediate position.
- 2) If the feeder does not vibrate adequately, turn sensitivity adjustment variable resistor **2** until it reaches the position to allow the feeder to vibrate most. Then turn sensitivity adjustment variable resistor **3** and make a fine adjustment so that vibration of the feeder is maximized.
- 3) Adjust the flow of buttons using the button feeder adjusting variable resistor **1**.

2. ADJUSTING THE ATTACHMENTS IN THE FEEDER BOWL



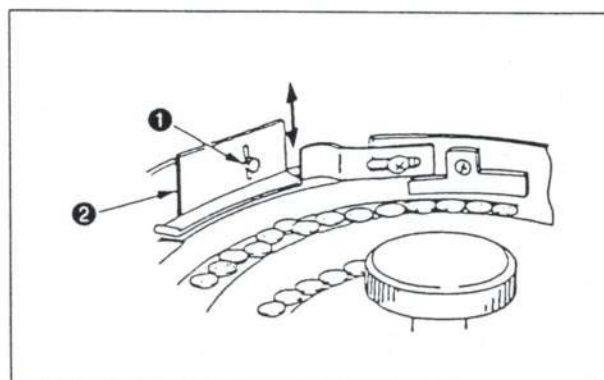
(1) Guide plate

- 1) Take care not to allow buttons to overlap one another before passing through the separation plate.
- 2) The appropriate clearance between the button top face and the guide plate **1** is approximately 0.7 mm.
- 3) Loosen screws **2**, and move guide plate **1** up and down to adjust the clearance appropriately.



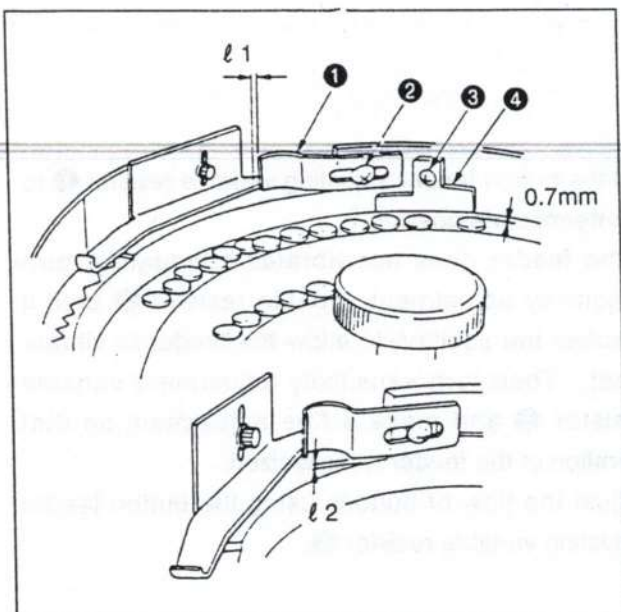
(2) Separation plate

- 1) Buttons with their wrong side up are sorted from those with their right side up when they pass the selector plate. So only the buttons with their right side up are fed into the index unit.
- 2) To adjust the selector plate, loosen screw **1**, and move selector plate **2** back or forth until it is properly positioned. Then tighten screw **1**.



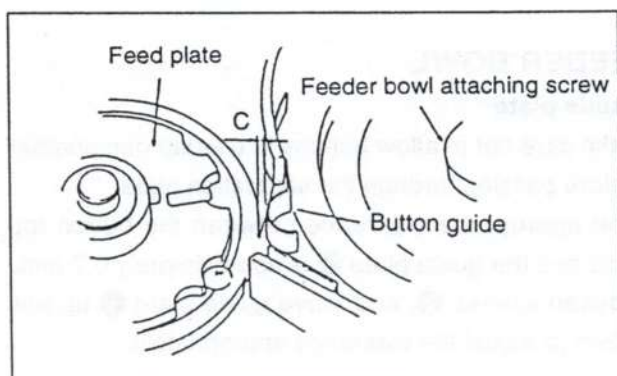
(3) In-line arrangement plate

- 1) This plate prevents buttons which have passed the separation plate from piling up.
- 2) The appropriate clearance between in-line arrangement plate **2** and the top face of a button is approximately 0.7 mm.
- 3) Loosen screw **1**, and move the in-line arrangement plate **2** up or down to adjust the clearance to the correct value.

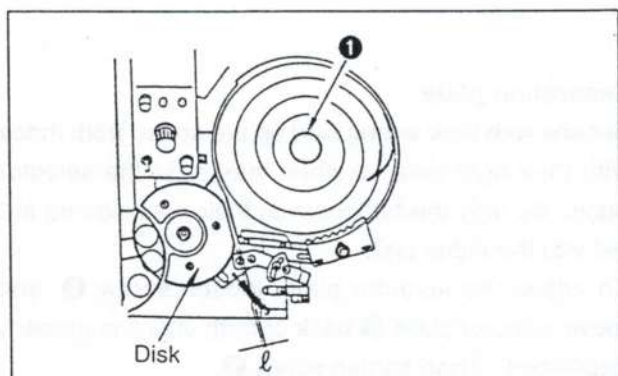


(4) Button guide

- 1) Appropriate clearance l_1 between the button guide ① and the button is approximately 3 to 4 mm. Loosen screw ②, and adjust the clearance to the correct value.
- 2) Appropriate clearance l_2 between lower surface of the button guide and the track surface of the feeder bowl is 0.3 to 0.5 mm.
A clearance which is larger than the value twice as thick as a button by approximately 0.7 mm should be provided between overflow prevention plate ④ and the button.
- 3) Loosen screw ③, and adjust the clearance to the correct value.



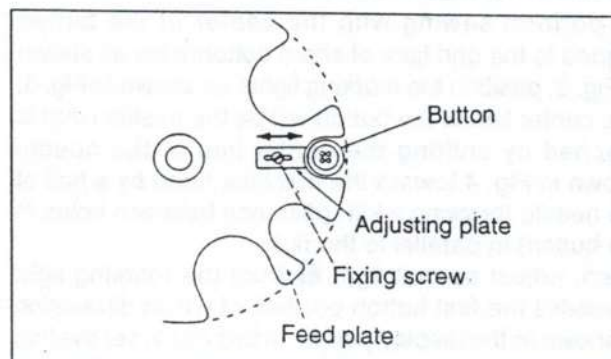
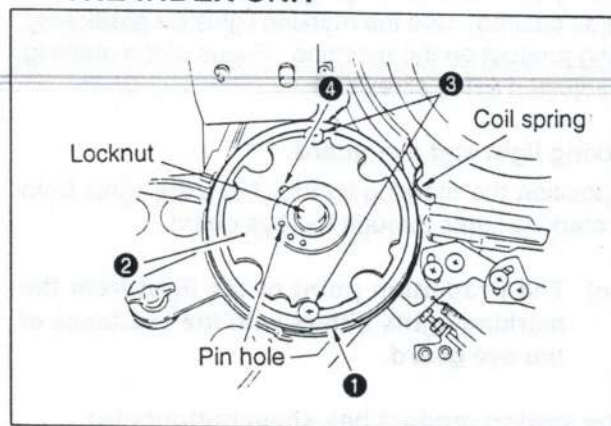
- 4) Adjust so that clearance C of 2 ± 0.5 mm is provided between the button guide and the feed plate. Adjust clearance C properly by bending the button guide.



(5) Adjusting the position of the feeder bowl

Adjust clearance l between the feeder bowl and the disk to approximately 1 to 1.5 mm. The position of the feeder bowl can be finely adjusted by loosening the feeder bowl attaching screw ① and changing the position of the feeder bowl.

3. ADJUSTING THE FEED PLATE OF THE INDEX UNIT



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

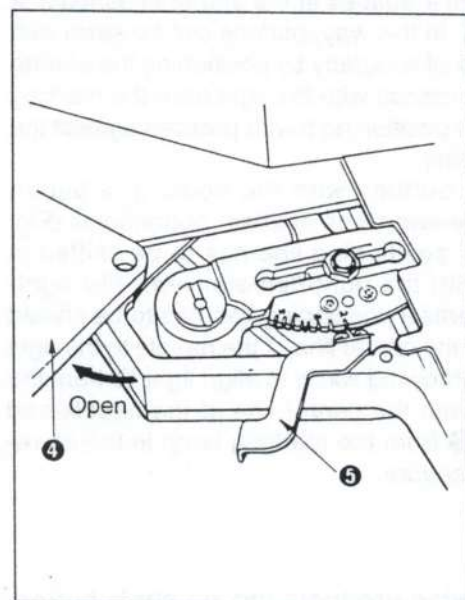
- 1) Confirm that the index unit is in its origin. Then loosen the locknut, and remove the feed plate. Loosen screws ③ and screw ④, and remove frame ① and the adjusting plate ②.
- 2) Select one hole from among three holes with different diameters ($\phi 18$, $\phi 16$, $\phi 12$) in the feed plate, and finely adjust the hole selected to the buttons to be used using the button adjuster. Adjust so that the periphery of the button is flush with the periphery of the feed plate.
- 3) Adjust the clearance into which the button is placed using the adjusting plate ②. Adjust the clearance to allow only one button to go through it. Once the feed plate is correctly positioned, fix it by tightening the screw.
- 4) Close the other holes using frame ①, and fix the frame using screws ③.
- 5) Install the feed plate which has been properly adjusted on the feeder. At this time, be careful to set the feed plate so that the button hole in it to be used meets the outlet of the feeder bowl. Then, tighten the locknut.

(Caution) Tighten the screw with care since the adjusting plate ② is likely to break.

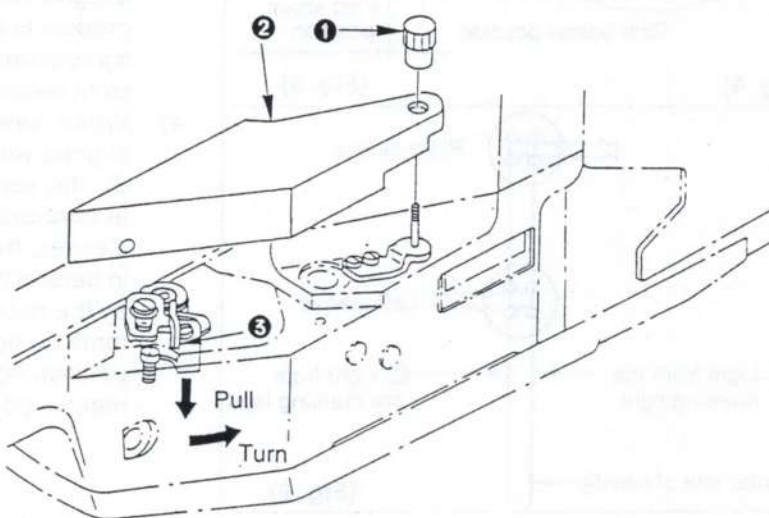
4. ADJUSTING THE SEWING SIZE



Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Remove the cover directly upward from the setting position.



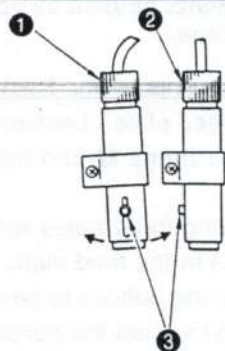
(1) Width

- 1) Turn knob ① until it comes off. Remove bed cover A ②. Pull lever ③ and turn it in the direction of the arrow. Now, the sewing size can be adjusted.
- 2) After the adjustment, fix lever ③ by turning it in the opposite direction of the arrow. Then, attach bed cover A ② in position.

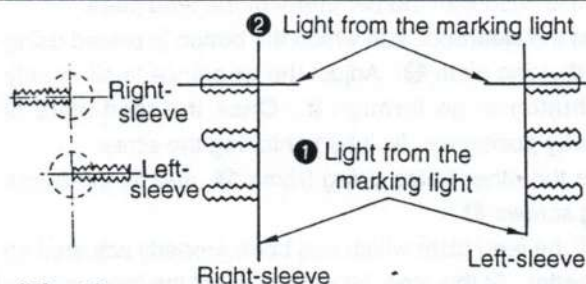
(2) Length

- 1) Open bed cover B ④ in the direction of the arrow. Determine the sewing length by fitting one-touch utility adjusting lever ⑤ in the slit on the scale plate.
- 2) If one-touch utility adjusting lever ⑤ is set to the 2-holed button position, the lengthwise feeding amount will be zero (0) to allow the machine to sew 2-holed buttons. Lower the button clamp jaw lever, and the one-touch utility adjusting lever can be operated lightly.

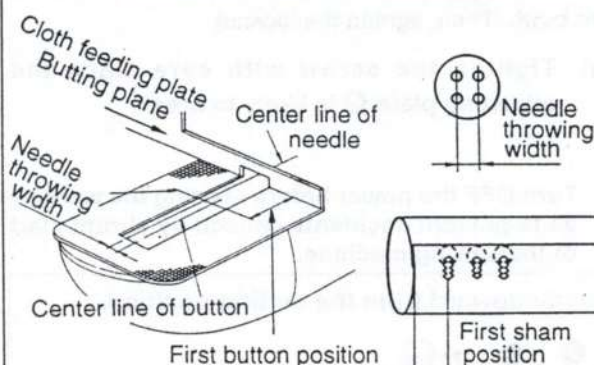
5. POSITIONING THE MARKING LIGHT



(Fig. 1)

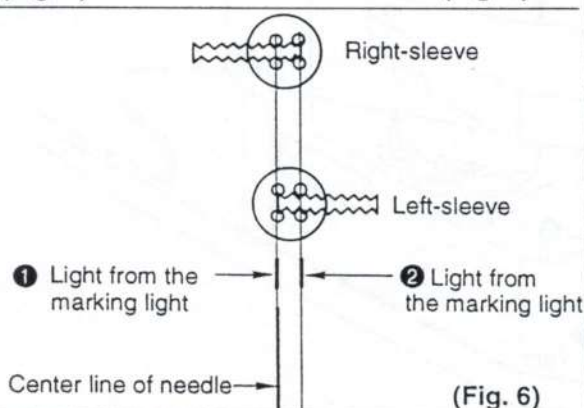


(Fig. 2)

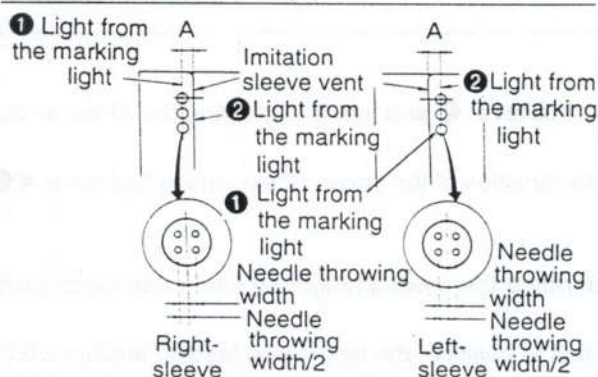


(Fig. 4)

(Fig. 5)



(Fig. 6)



(Fig. 7)

Irradiation point of marking lights ① and ② can be changed as desired. Use the marking lights for positioning the sewing product on the machine. Focus of the marking lights is adjusted using screws ③.

(1) Marking light and eye guard

To position the marking lights, check the lights from the marking lights through the eye guard.

(Caution) The irradiation point of the light from the marking lights differs with the existence of the eye guard.

(2) If the sewing product has sham buttonholes

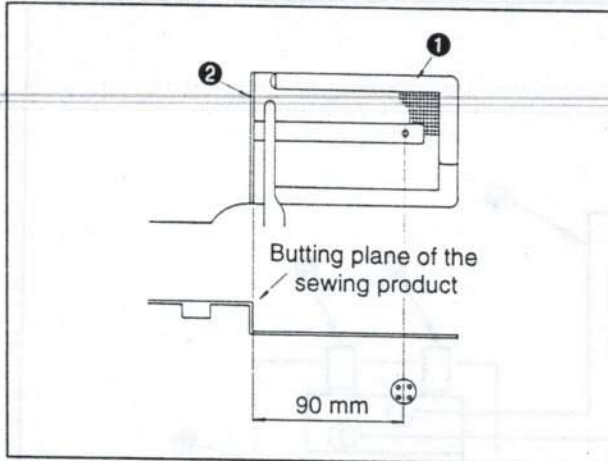
- 1) To perform sewing with the center of the button aligned to the end face of sham buttonholes as shown in Fig. 2, position the marking lights as shown in Fig. 3.
- 2) The center line of the button will be the position that is reached by shifting the center line of the needle shown in Fig. 4 toward the machine head by a half of the needle throwing width (distance between holes in the button) in parallel to the right.
- 3) Then, adjust so that light ② from the marking light irradiates the first button position of which dimension is shown in the display panel. In this case, set the first button position on the display panel to a value that is larger than the first sham buttonhole position (the first button position) in Fig. 5 by a few millimeters (approximately 3 to 5 mm). Adjust so that light ② from the marking light irradiates at the aforementioned first button position. In this way, buttons can be sewn with a higher degree of accuracy by positioning the sewing product in accordance with the light from the marking lights instead of positioning it with pressed against the cloth feeding plate.
- 4) When sewing buttons with the holes in a button aligned with the end faces of sham buttonholes (Fig. 6), the vertical positioning line has to be shifted in accordance with the right-/left-sleeves. For right-sleeves, the vertical positioning line has to be shifted in parallel from the center line of the needle to the right by the needle throwing width to align light ① from the marking light with the center line of the needle and position light ② from the marking lamp in the aforementioned procedure.

(3) When the sewing products has no sham button-holes

It is helpful to adjust the marking lights to the imitation sleeve vent as shown in Fig. 7.

(At this time, dimension A for the right-sleeve is the total of the distance from the imitation sleeve vent to the center line of the needle and a half of the needle throwing width. Dimension A for the left-sleeve is obtained by subtracting a half of the needle throwing width from the distance from the imitation sleeve vent to the center line of the needle.)

6. ADJUSTING THE POSITION OF THE ORIGIN






Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

The button sewing position on the sewing product is always determined by calculating using the origin as basis. It is therefore necessary to correctly re-position the origin after re-assembling work clamp ① or cloth feeding plate ②.

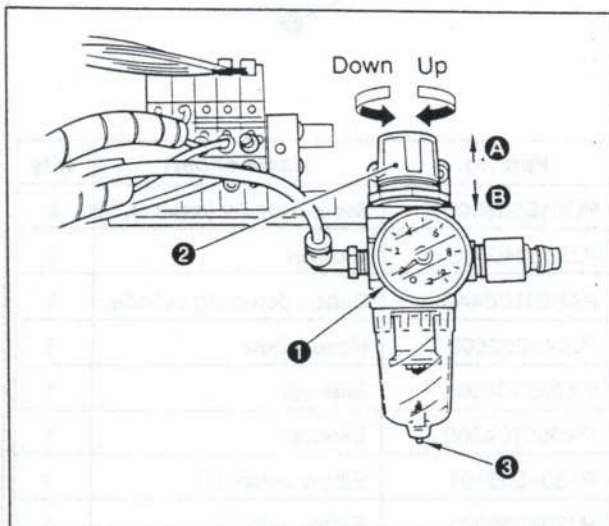
• Adjust the position of the origin in the procedure given below.

1) In the data preparing procedure, input the following data (refer to "INPUTTING AND CONFIRMING DATA" on pages 7 through 10):

The number of buttons	2 pcs.
The location of the first button	30.0 mm
Button interval	60.0 mm
Cross-over stitches	OFF

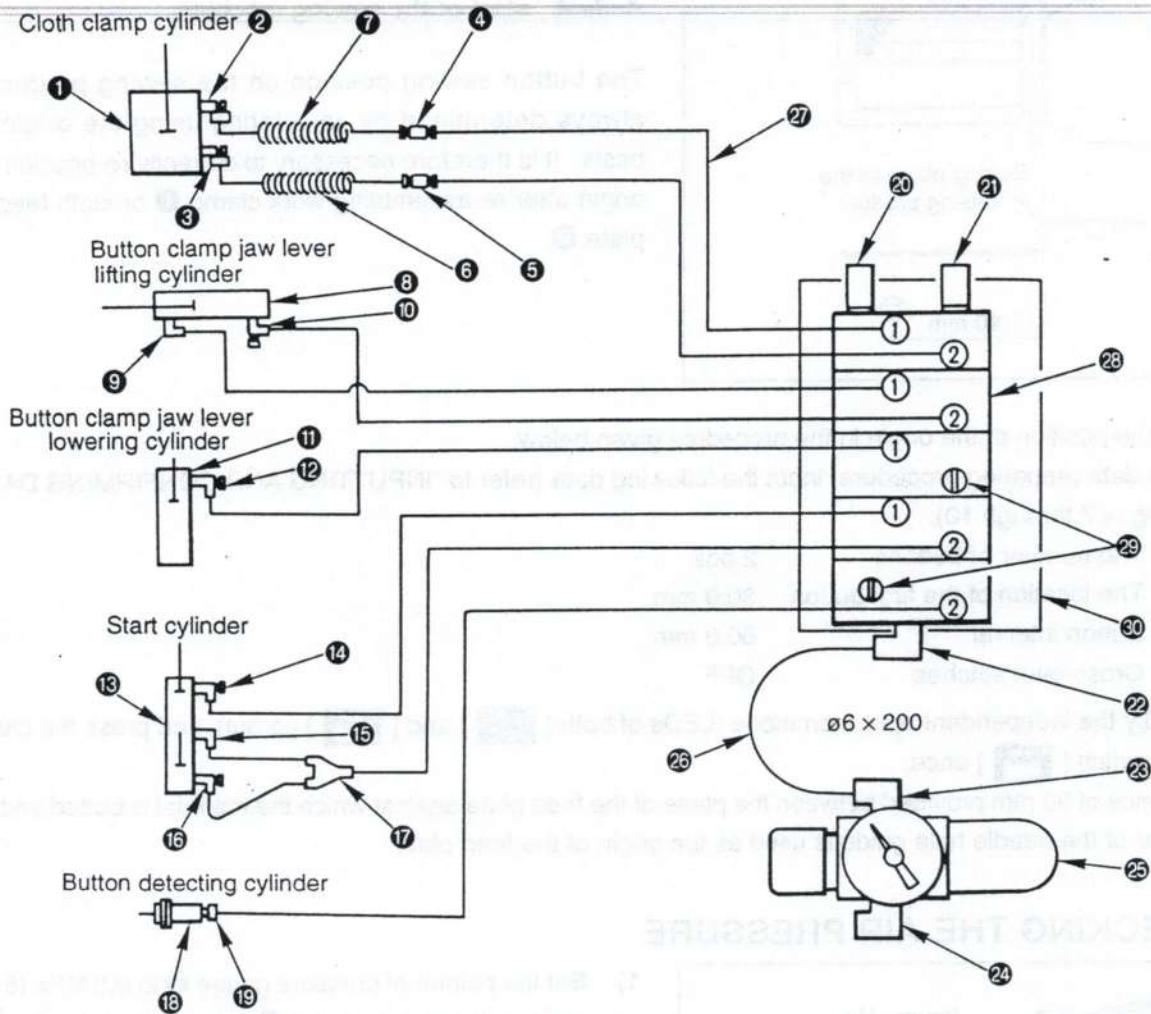
- Specify the independent operation mode (LEDs of both [] and [] go out), and press the carrier feed switch [] once.
- Distance of 90 mm provided between the plane of the feed plate against which the material is butted and the center of the needle hole guide is used as the origin of the feed plate.

VII. CHECKING THE AIR PRESSURE








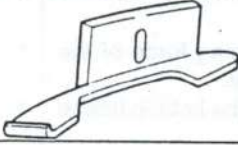

- Set the pointer of pressure gauge ① to 0.5 MPa (5 kgf/cm²). Lift regulator knob ② toward direction A. Turn the knob clockwise to raise the air pressure or counterclockwise to lower it. After the air pressure is properly set, press regulator knob ② down in direction B to lock it.
- If water gathers in the pressure gauge, press drain button ③ with the air pressure applied so as to drain off the water.

VIII. AIR DIAGRAM



No.	Part No.	Name of part	Q'ty	No.	Part No.	Name of part	Q'ty
1	PA1001516A0	Work clamp cylinder	1	16	PC010508000	Speed controller (meter OUT)	2
2	PC010517000	Speed controller	1	17	PJ308040002	Y union	1
3	PC010517000	Speed controller	1	18	PA0601004A0	Button detecting cylinder	1
4	PJ303040002	Joint	1	19	PJ046052503	Hose elbow	1
5	PJ303040002	Joint	1	20	PX055104000	Silencer	1
6	16232209	Spiral tube	1	21	PX055104000	Silencer	1
7	16232209	Spiral tube	1	22	PJ304065101	Elbow union 1/8	1
8	PA10022005A0	Button clamp jaw lever lifting cylinder	1	23	PJ304065201	Elbow union	1
9	PJ304040504	Elbow union	1	24	F1021003000	Hose joint	1
10	PC010514000	Speed controller (meter IN)	1	25	PF0252040A0	Regulator asm.	1
11	PA1601510A0	Button clamp jaw lever lowering cylinder	1	26	BT0600400EB	ø6 tube	0.3M
12	PJ304040504	ø4 Elbow union	1	27	BT0400251EB	ø4 tube	5.5M
13	PA1603101A0	Start cylinder	1	28	G10232860A0	Solenoid valve asm.	1
14	PC010508000	Speed controller (meter OUT)	2	29	PX500014000	Blind plug ø4	2
15	PJ304040504	Elbow union	1	30	PV035144000	Manifold	1

IX. OPTIONAL PARTS

Part No.	Name of part	Shape	Application
16557704	Work attachment, large	 9.5 mm	The shape of this work attachment is as same as that of the standard type of work attachment and has a large bottom diameter. It is suited to large buttons of which diameter is approximately 18 mm. When replacing the standard work attachment with this work attachment, re-adjust the fine positioning completion switch.
18257006	Work attachment (with a groove)	 8 mm Bottom surface 	This work attachment has a bottom of which diameter is standard but is provided with a cross groove. It is suited to special-shape buttons (such as marble buttons) which do not smoothly rotate when using the standard attachment.
18257105	Work attachment (with a recessed end)	 8 mm	This work attachment has a bottom of which diameter is standard but has a conic recess. It is suited to the buttons, such as marble buttons, which has a protruded top face.
18257204	Work attachment (with a recessed end)	 9.5 mm	This work attachment is same as 18257105 in shape but has a larger bottom diameter. When replacing the standard work attachment with this work attachment, re-adjust the fine positioning completion switch.
18213207	In-line arrangement plate A		This in-line arrangement plate is suited when sewing buttons including marble-shaped buttons which are likely to be clogged in the standard in-line arrangement plate.
16558207	Centering ring, large		This plate is designed to prevent buttons from being clogged. Use this ring when centering the origin of the button carrier, E, F, G or H.

Diameter of the set pin

Distance between holes	Button carrier	Set pin	Diameter of pin	Q'ty
				
2.6 x 2.6 mm	GBR-02158CA0	GBR-01156000	Ø1	4
3.1 x 3.1 mm	GBR-02158DA0	GBR-01156000	Ø1	4
2.0 x 2.0 mm	GBR-02158QA0	GBR-01156000	Ø1	4
2.2 x 2.2 mm	GBR-02158RA0	GBR-01156000	Ø1	4
2.4 x 2.4 mm	GBR-02158SA0	GBR-01156000	Ø1	4
2.4 x 2.4 mm	GBR-02158TA0	GBR-01155000	Ø1.2	4
2.6 x 2.6 mm	GBR-02158UA0	GBR-01155000	Ø1.2	4
2.8 x 2.8 mm	GBR-02158VA0	GBR-01155000	Ø1.2	4
3.0 x 3.0 mm	GBR-02158WA0	GBR-01155000	Ø1.2	4
3.1 x 3.1 mm	GBR-02158AAB	GBR-01155000	Ø1.2	4
3.1 x 3.1 mm	GBR-02158AAE	GBR-01155H00	Ø1.4	4
4.0 x 4.0 mm	GBR-02158XA0	GBR-01155000	Ø1.2	4
3.2 x 3.2 mm	GBR-02158YA0	GBR-01155D00	Ø1.5	4

* If an independent bobbin winder is necessary, please contact our distributors or agents in your area.

X. TROUBLES AND CORRECTIVE MEASURES IN BUTTON SEWING

Trouble (Phenomenon)	Cause	Corrective measures
1. Thread slips off the needle at the start of sewing. The machine starts sewing a button from an intermediate step of button sewing procedure.	<ol style="list-style-type: none"> ① Length of needle thread remaining in the needle is too short. ② The material flops. ③ The wiper does not press the thread. 	<ul style="list-style-type: none"> • Decrease the tension of the tension controller No. 1. • Adjust the tension release timing of the tension controller No. 2 • Use a needle hole guide with a higher boss. • Use a button clamp of which lever plate is thinner than the current one. • Correct the wiper spring.
2. Needle breakage frequently occur.	<ol style="list-style-type: none"> ① The needle hits the edge of holes in the button. ② The boss of the needle hole guide comes in contact with the recessed part of the feed plate. ③ The needle used is too thin. ④ The needle hits the knot-tying plate. 	<ul style="list-style-type: none"> • Adjust the position of the button clamp jaw lever so that the needle enters the exact center of the holes in the button. • Adjust the position of the feed plate so that it does not come in contact with the boss of the needle hole guide. If the sewing size is too large for the feed plate used, replace it with the feed plate for medium-size buttons or for large buttons. • Change the needle count in accordance with the sewing product or the holes in the button. • Adjust the timing of knot tying and the stroke of the knot-tying plate so that the needle does not come in contact with the plate.
3. The finished state of the wrong side of the material is extremely poor.	<ol style="list-style-type: none"> ① Length of needle thread remaining in the needle is too long. ② The thread catching force of the wiper is excessive. ③ Idling amount of the bobbin thread is excessive. ④ If sewing a button of which wrong side is round-shaped, the stitches on the wrong side of the material are entangled to make a lump of thread. 	<ul style="list-style-type: none"> • Increase the tension of the tension controller No. 1. • Adjust the tension release timing of the tension controller No. 2. • Decrease the pressure of the wiper spring. • Use a bobbin case (provided with an idling prevention spring) exclusively used for the LK-1851-555. • Use a button clamp of which lever plate is thicker than the current one.
4. Knot-tying is not performed with consistency.	<ol style="list-style-type: none"> ① Timing or stroke of the knot tying device is not correct. ② Tension of the tension controller No.1 is too high. ③ Tension of the tension controller No.1 is too high. ④ Tension disk of the thread adjustment device does not float at the time of stop-motion. ⑤ When the material sewn has been attached with a reinforced interlining, the needle fails to smoothly come out of the material. 	<ul style="list-style-type: none"> • Adjust the timing of knot tying and the stroke of the knot-tying plate so that the needle does not come in contact with the plate. • Adjust the position of the button clamp jaw lever so that the needle enters the exact center of the holes in the button. • Decrease the tension of the tension controller No. 1. • Adjust the tension disk so that it floats to release the thread tension at the time of stop-motion. • Use a thinner needle.
5. The button is not sewn at the correct position.	<ol style="list-style-type: none"> ① The button is not secured in the correct sewing position. ② The leaf spring of the button clamp excessively works. ③ space between the bottom face of the button and the top face of the boss of the needle hole guide. As a result, the button is not fed smoothly. 	<ul style="list-style-type: none"> • Improve the actuation of the button clamp. • Correct the leaf spring so that it does not excessively work. • Use a button clamp jaw lever of which lever plate is thicker than the current one.

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* The description covered in this instruction manual is subject to change for improvement of the commodity without notice.