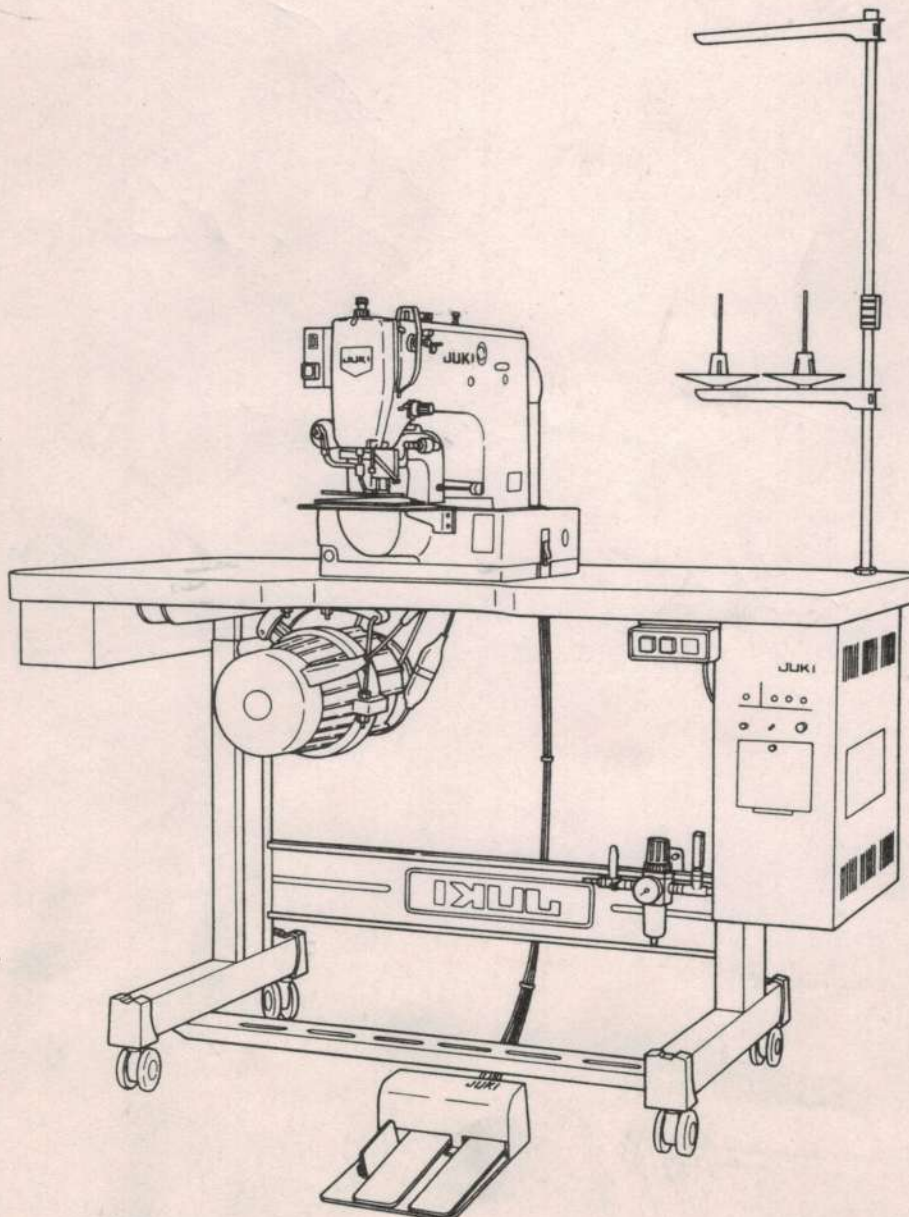


JUKI

Computer control, cycle machine
for heavy-weight materials

AMS-206CGL

INSTRUCTION MANUAL

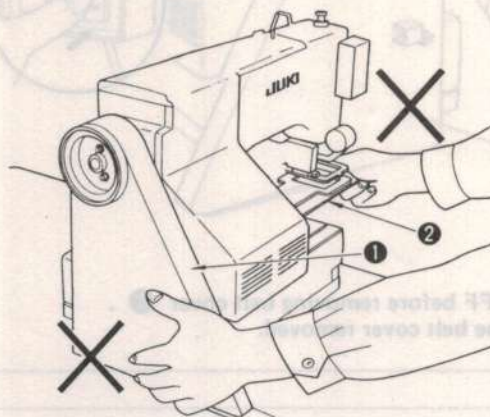


No.00

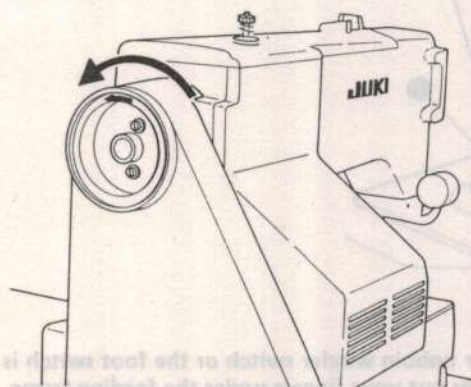
29066404

Congratulations on your purchase of JUKI Model AMS-206CGL-5000 (hereinafter called AMS-206CGL). Please read this instruction manual carefully before using this unit in order to get the most out of it and to enjoy using it for a long time.

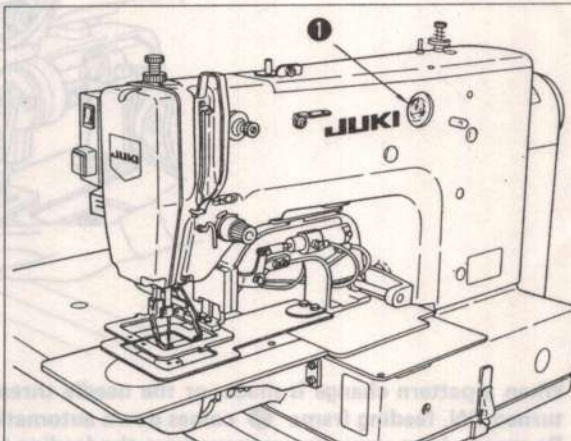
CAUTIONS BEFORE OPERATION



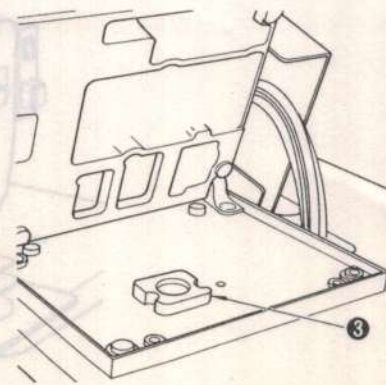
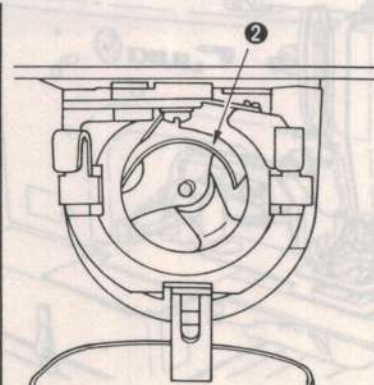
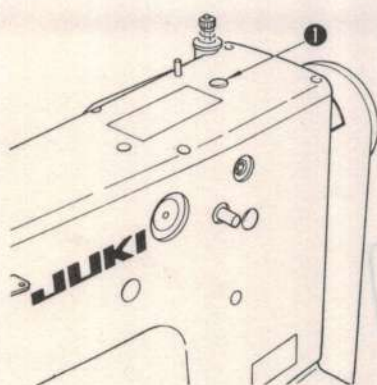
1. Do not hold belt cover ① or throat plate auxiliary cover ② when carrying your AMS-206CGL.



2. The sewing machine should run counterclockwise (in the direction of the arrow) as observed from the pulley side. Never allow the machine to run in the reverse direction.

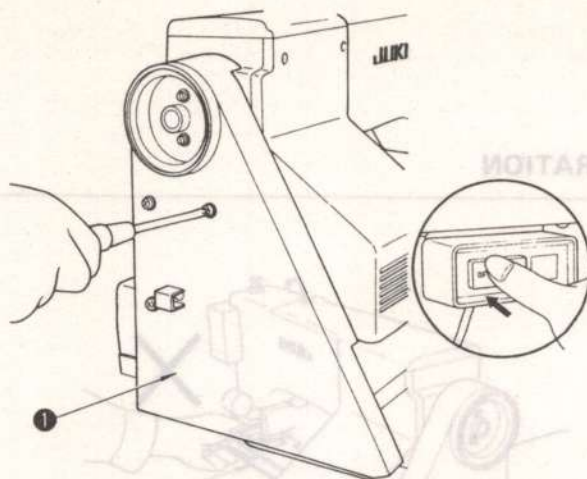


3. Be sure to supply oil until the oil level reaches the red mark of oil gauge ①. After that, refill the machine with oil up to the red mark once a day.

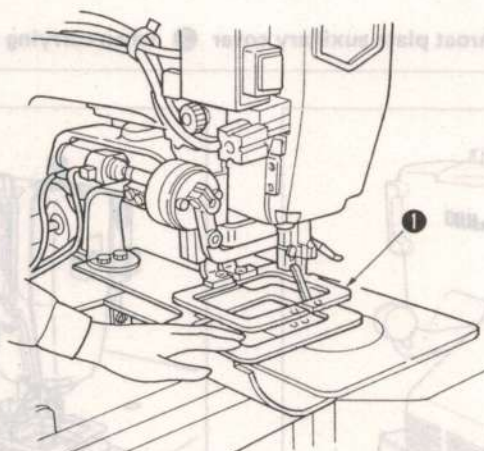


4. Before starting the machine which has been newly set up or has not been used for a long period of time, apply a few drops of the lubricating oil to the crank assembly through hole ①, one drop to racing surface ②, and infiltrate sufficient amount of the lubricating oil to machine bed oil felt ③.

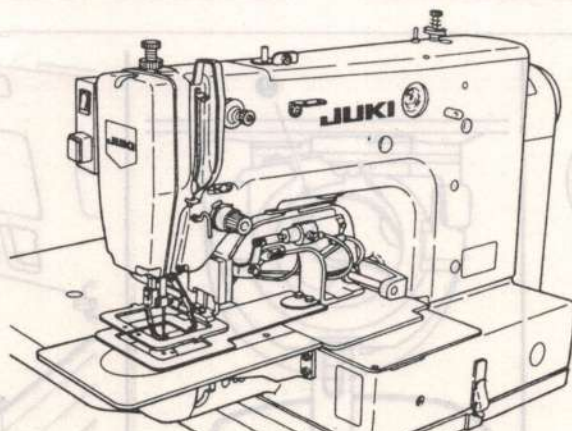
CAUTIONS IN OPERATION



1. Be sure to turn the power switch OFF before removing belt cover ① .
Do not operate the machine with the belt cover removed.



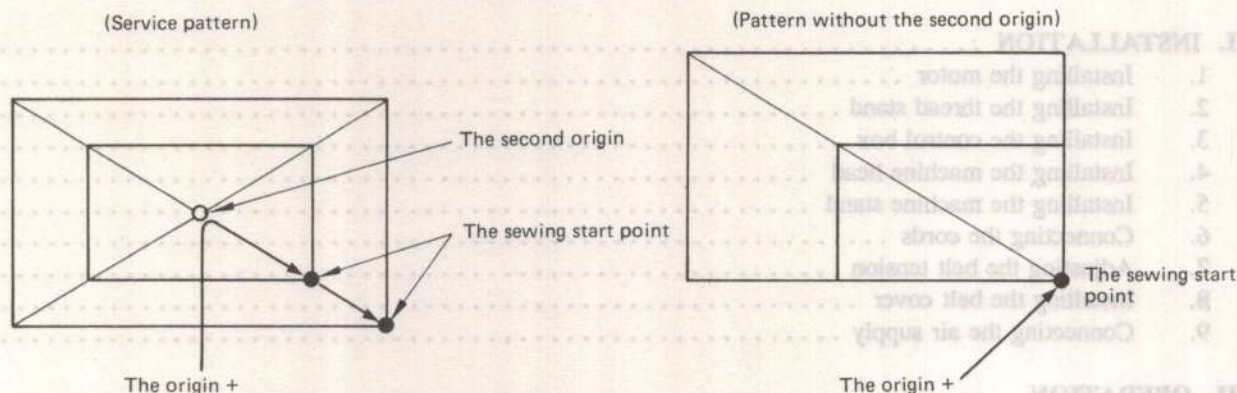
2. When a pattern change is made, or the needle threading switch or bobbin winder switch or the foot switch is turned ON, feeding frame ① comes down automatically. So, never put your fingers under the feeding frame. Be sure to keep your fingers away from the feeding frame while the machine is in operation.



3. To assure accurate pattern sewing, push feed plate ① by hand fully forward and backward, then fully to the right and left once every day before turning the power ON. Never do this after the machine has been powered up.

4. Pattern enlargement/reduction for the AMS-206CGL

The reference point for the service patterns which have been factory-inputted is the second origin. The second origin is set 13 mm away from the origin. And the reference point for enlarging/reducing have been factory-set to the second origin. Therefore, enlarging/reducing will be performed around the second origin and enlarged/reduced toward the sewing start point. (The second origin is not the point to be stopped.)



The origin reference can be enlarged/reduced in accordance with the setting of the relevant DIP switch on the MAIN circuit board. Set this function referring to "DIP switches on the printed circuit board."

5. During operation, be careful not to allow your or any other person's head or hands to come close to the handwheel, V belt, bobbin winder or motor. Also, do not place anything near any of these parts while the machine is in operation. Doing so may be dangerous.
6. If your machine is equipped with a belt cover, finger guard, eye guard or any other protections, do not operate your machine with any of them removed.

IV. MAINTENANCE

1. Adjusting the height of the needle bar
2. Adjusting the needle-to-shuttle relationship
3. Adjusting the moving knife and the counter knife
4. Adjusting the height of the intermediate presser
5. Adjusting the intermediate presser bar
6. Adjusting the height of the feeding frame
7. Adjusting the wiper
8. Adjusting the thread breakage detector
9. Adjusting the needle-up stop position
10. Changing the direction of rotation of the sewing machine
11. Adjusting the lifting/lowering speed of the feeding frame
12. How to operate the PK-47-3 pedal unit
13. Replacing the fuse

V. OPTION

VI. TROUBLESHOOTING AND CORRECTIVE MEASURES

CONTENTS

I. GENERAL	1
1. Configuration	1
2. Features	2
3. Specifications	3
II. INSTALLATION	5
1. Installing the motor	5
2. Installing the thread stand	5
3. Installing the control box	5
4. Installing the machine head	6
5. Installing the machine stand	6
6. Connecting the cords	7
7. Adjusting the belt tension	8
8. Installing the belt cover	8
9. Connecting the air supply	9
III. OPERATION	10
1. Selecting a suitable needle and needle hole guide	10
2. Attaching a needle	10
3. Threading the machine head	11
4. Installing a silicon oil tank	11
5. Installing and removing the bobbin case	12
6. Installing the bobbin in the bobbin case	12
7. Winding a bobbin	12
8. Thread tension	13
9. Installing the eye guard	13
10. Adjusting the thread take-up spring	14
11. Control box	14
12. DIP switches on the printed circuit board	19
13. How to replace data P-ROM	24
14. Foot switch	24
15. Emergency stop switch and Wiper ON/OFF switch	24
16. External output signals (sewing machine signals)	25
17. Interchangeability of the data ROM with the programming device	25
18. Operation	26
IV. MAINTENANCE	30
1. Adjusting the height of the needle bar	30
2. Adjusting the needle-to-shuttle relationship	31
3. Adjusting the moving knife and the counter knife	32
4. Adjusting the height of the intermediate presser	32
5. Adjusting the intermediate presser bar	32
6. Adjusting the height of the feeding frame	33
7. Adjusting the wiper	33
8. Adjusting the thread breakage detector	33
9. Adjusting the needle-up stop position	34
10. Changing the direction of rotation of the sewing machine	34
11. Adjusting the lifting/lowering speed of the feeding frame and the lowering pressure of the feeding frame	35
12. How to operate the PK-47 3-pedal unit	36
13. Replacing the fuse	38
V. OPTION	39
VI. TROUBLES AND CORRECTIVE MEASURES	43

I. GENERAL

The AMS-206CGL is a computer-controlled, 1-needle, cylinder-bed, lockstitch machine. It is an industrial automatic sewing machine provided with a separately driven feeding frame that is designed mainly for sewing on various small parts and for joining fabrics.

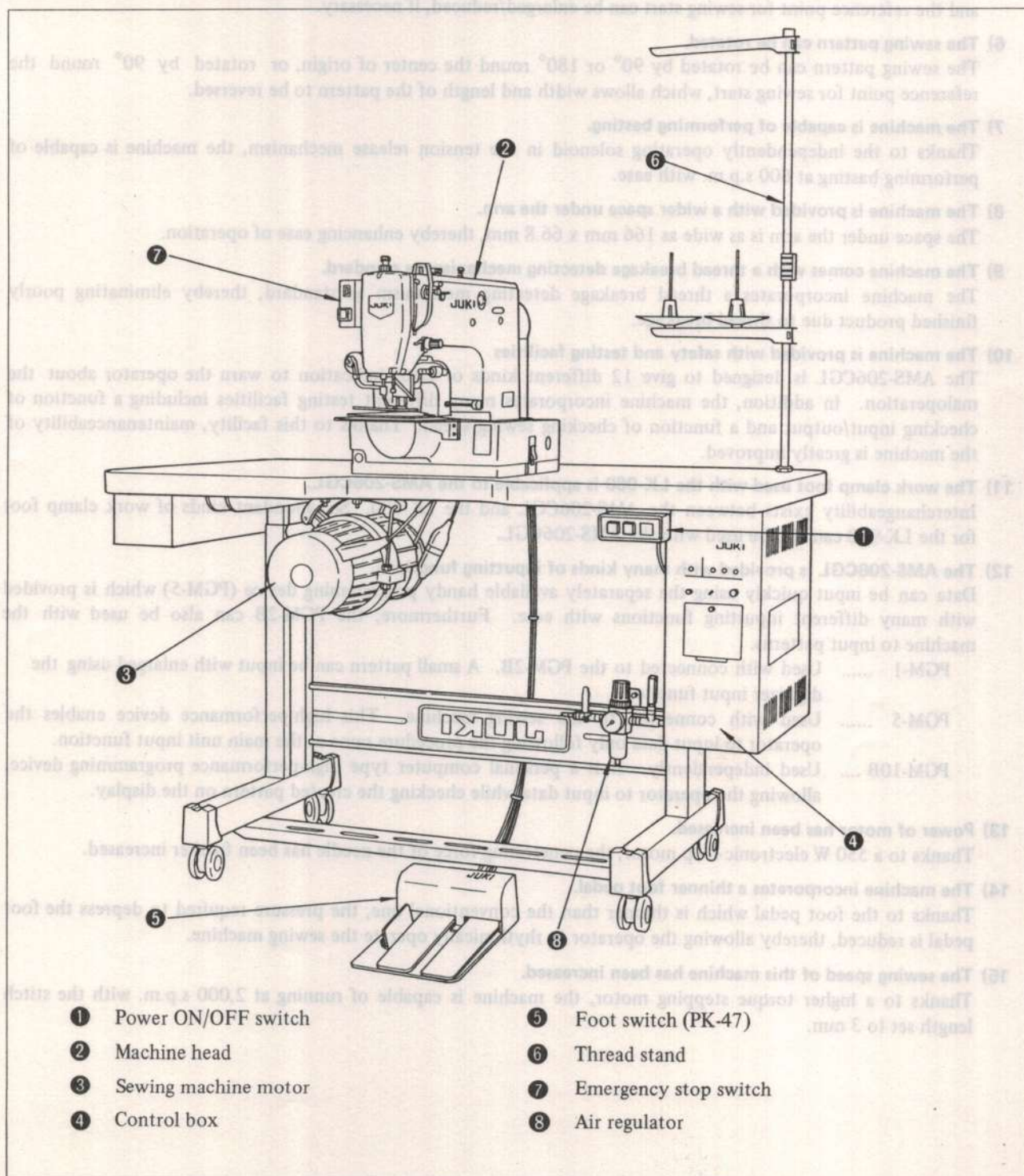
Thanks to the incorporation of a P-ROM, the AMS-206CGL can successfully perform complicated pattern stitching.

Furthermore, many different sewing patterns can be programmed using only one P-ROM. The machine comes with a bobbin for semi-rotary double-capacity shuttle, thereby helping reducing the operator's fatigue caused by bobbin thread changing. The improved thread take-up and thread trimming knife makes the machine suited to the sewing of heavy-weight materials including seat belts and leather.

You can easily create patterns using the JUKI compact programming devices (PGM-1 + PGM-2B, PGM-5 or PGM-10B) available optionally.

1. Configuration

The following shows the main components of the AMS-206CGL:



2. Features

1) The machine comes with a special-purpose double-capacity semi-rotary shuttle.

The AMS-206CGL incorporates a double-capacity semi-rotary shuttle, thereby enhancing efficiency.

2) It is a low-cost machine, and is provided with a large sewing area.

It has a sewing size measuring 50 mm x 40 mm, and is capable of sewing small patterns.

3) Lift of the feeding frame is very high.

The feeding frame goes up as high as 17 mm (standard), which means the workpiece can be placed/removed on/from the sewing machine with ease, thereby enhancing ease of operation.

4) The number of patterns that can be stored in memory is very large.

The machine use a 8k byte P-ROM as its memory medium. As a result, the number of stitches that can be used for a pattern is as large as 3,000 and the number of patterns that can be stored in memory is as large as 32. (Either EEP-ROM or EP-ROM can be used with this machine.)

5) It comes with a wide range of pattern scale.

The scale for pattern enlargement/reduction can be set to 1% to 255% in steps of 1%. Furthermore, the origin and the reference point for sewing start can be enlarged/reduced, if necessary.

6) The sewing pattern can be rotated.

The sewing pattern can be rotated by 90° or 180° round the center of origin, or rotated by 90° round the reference point for sewing start, which allows width and length of the pattern to be reversed.

7) The machine is capable of performing basting.

Thanks to the independently operating solenoid in the tension release mechanism, the machine is capable of performing basting at 600 s.p.m. with ease.

8) The machine is provided with a wider space under the arm.

The space under the arm is as wide as 166 mm x 66.8 mm, thereby enhancing ease of operation.

9) The machine comes with a thread breakage detecting mechanism as standard.

The machine incorporates a thread breakage detecting mechanism as standard, thereby eliminating poorly finished product due to thread breakage.

10) The machine is provided with safety and testing facilities

The AMS-206CGL is designed to give 12 different kinds of error indication to warn the operator about the maloperation. In addition, the machine incorporates many different testing facilities including a function of checking input/output and a function of checking sewing speed. Thanks to this facility, maintenanceability of the machine is greatly improved.

11) The work clamp foot used with the LK-980 is applicable to the AMS-206CGL.

Interchangeability exists between the AMS-206CGL and the LK-980. So, abundant kinds of work clamp foot for the LK-980 can also be used with the AMS-206CGL.

12) The AMS-206CGL is provided with many kinds of inputting functions.

Data can be input quickly using the separately available handy programming device (PGM-5) which is provided with many different inputting functions with ease. Furthermore, the PGM-2B can also be used with the machine to input patterns.

PGM-1 Used with connected to the PGM-2B. A small pattern can be input with enlarged using the digitizer input function.

PGM-5 Used with connected to the sewing machine. This high-performance device enables the operator to input data only following the procedure same as the main unit input function.

PGM-10B Used independently. It is a personal computer type high-performance programming device, allowing the operator to input data while checking the created pattern on the display.

13) Power of motor has been increased.

Thanks to a 550 W electronic-stop motor, the penetrating force of the needle has been further increased.

14) The machine incorporates a thinner foot pedal.

Thanks to the foot pedal which is thinner than the conventional one, the pressure required to depress the foot pedal is reduced, thereby allowing the operator to rhythmically operate the sewing machine.

15) The sewing speed of this machine has been increased.

Thanks to a higher torque stepping motor, the machine is capable of running at 2,000 s.p.m. with the stitch length set to 3 mm.

16) Separately-driven feeding frame has been adopted.

The AMS-206CGL comes with a separately driven feeding frame, which facilitates setting of the material on the machine.

The right- and left-frames of the feeding frame can be separately driven and they can be simultaneously raised/lowered by changing over the setting of the DIP switch.

17) The lifting amounts of the right- and left-frames of the feeding frame can be separately adjusted.

The lifting amount of the right-frame and that of the left-frame of the feeding frame can be separately adjusted in accordance with the shape of the sewing product.

18) Best-suited to the sewing of heavy-weight materials

Thanks to the improved thread take-up lever, the machine is capable of performing higher-quality sewing of heavy-weight materials including seat belts and leather.

19) The machine comes with a thread trimmer for thick threads.

The thread trimmer is capable of cutting thick threads used for needle thread and bobbin thread. (Thick threads that can be trimmed are those equivalent to Spun #2, Ticket #6 and Tex #440 by English thread counting system.)

20) The machine comes with a large silicon oil lubricating unit.

The machine is equipped with a large silicon oil lubricating unit as a standard device.

21) A compressor unit can be attached to the machine after the set-up.

A compressor unit is optionally available. It can be attached to your AMS-206CGL with no additional machining.

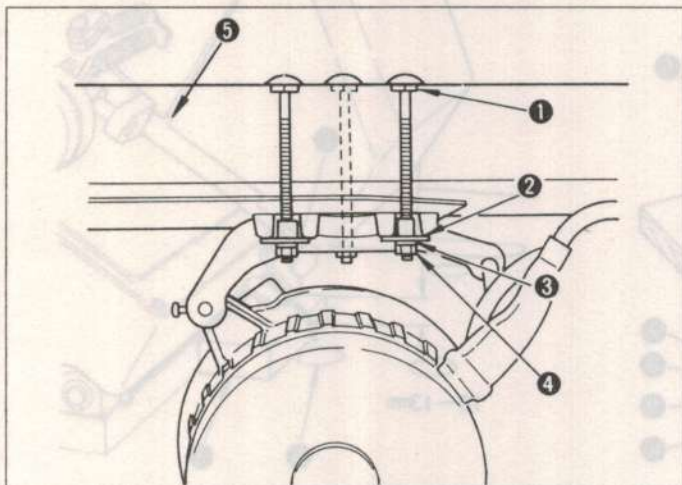
3. Specifications

- | | | |
|---------------------------------|---|---|
| 1) Seam length | : | X (lateral) direction 50 mm
Y (longitudinal) direction 40 mm |
| 2) Max. sewing speed | : | 2,000 s.p.m. (for stitch lengths of 3 mm or less) |
| 3) Stitch length | : | Max. 6.2 mm (adjustable in 0.2 mm steps) |
| 4) Feed motion of feeding frame | : | Intermittent feed (2-shaft drive by stepping motor) |
| 5) Needle bar stroke | : | 41.2 mm |
| 6) Needle | : | DP x 17 |
| 7) Lift of the feeding frame | : | Standard 17 mm, Max. 18 mm
The lifting amounts of the right and left frames can be separately changed.
The right and left frames can be raised/lowered together. The raising/lowering speed can be changed. |
| 8) Intermediate presser stroke | : | 6 mm (standard) |
| 9) Lift of intermediate presser | : | 14 mm |
| 10) Shuttle | : | Double-capacity, semi-rotary type (self-lubricated) |
| 11) Bobbin case | : | Double-capacity, semi-rotary shuttle type |
| 12) Bobbin | : | Double-capacity shuttle type |
| 13) Lubricating oil | : | New Defrix Oil No. 2 (supplied by oiler) |
| 14) Thread trimmer | : | Consists of moving knife and counter knife (actuated by grooved cam) |
| 15) Wiper | : | Magnetically driven (with release switch) |
| 16) Intermediate presser lifter | : | Raised/lowered by an air cylinder (with release switch) |
| 17) Memory medium | : | P-ROM (EEP-ROM, EP-ROM)
Memory capacity – 8K Byte
Memory pattern – Max. 32 patterns/P-ROM |

- 18) Sewing operation : Starts/ends at sewing start point or the 2nd origin
- 19) Feeding frame : Three different kinds of operating method can be selected in accordance with the connecting method of connector.
- 20) Start up : Three different kinds of operating method can be selected in accordance with the connecting method of connector.
- 21) Emergency stop mechanism : Capable of stopping sewing operation while the machine is actuating. After an emergency stop, the feeding frame can be started along the stitching line by operating the "Backward" or "Forward" switch. The interrupted stitching can be completed by pressing the start switch. Alternatively, by depressing the "Return to origin" switch, the feeding frame returns to the sewing start point or to the second origin at once. In case of taking the latter operation after an emergency stop, it is required to trim the thread by turning ON/OFF of the needle-threading switch.
- 22) Enlarging/Reducing facility : Allows a pattern to be enlarged or reduced on the X axis and Y axis, independently when sewing a pattern.
Scale : 0.01 to 2.55 times (adjustable in 0.01 steps)
- 23) Max. sewing speed limitation : The max. sewing speed can be set limited to any value within a range of 180 to 2,000 s.p.m., using the external control knob.
- 24) Pattern selection : 1 to 99 patterns can be selected by specifying the desired pattern Nos.
- 25) Error indication : 12 types of error indication are given.
- 26) Programming : Involves point/linear/arc numeral data, temporary stop, thread trim, jump data, sewing speed, and stitch length.
- 27) Needle threading : The feeding frame and intermediate presser are lowered by turning ON the needle threading switch, thereby allowing the operator to thread the needle with ease.
- 28) Needle-up stop facility : When the needle does not stop in its upper position, the needle can be brought up to the upper position by turning the needle threading switch ON or OFF. (Provided the ERROR lamp is OFF)
- 29) Sewing machine motor : 550W, 2P electronic-stop motor
- 30) Dimensions (excluding thread stand) : 1,200 mm(W) x 675 mm(L) (AMS-205C) 1,130 mm(H) (for sitting)
x 705 mm(L) (AMS-206C) 1,210 mm(H) (for standing)
- 31) Gross weight : 125 kg
- 32) Power consumption : 1kVA
- 33) Operating temperature range : 0° C to 40° C
- 34) Operating humidity range : 20 to 80% (no dew condensation)
- 35) Line voltage : Rated voltage \pm 10% 50/60 Hz
- 36) Air pressure used : 5 ~ 5.5 kg/cm²
- 37) Air consumption : 1.8 l/min

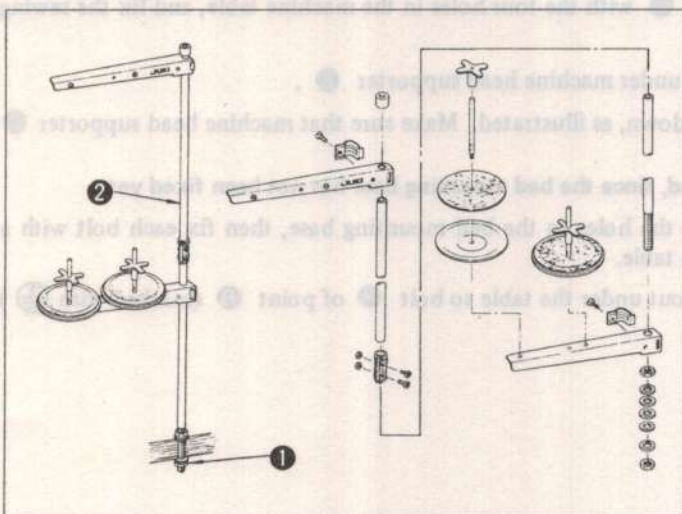
II. INSTALLATION

1. Installing the motor



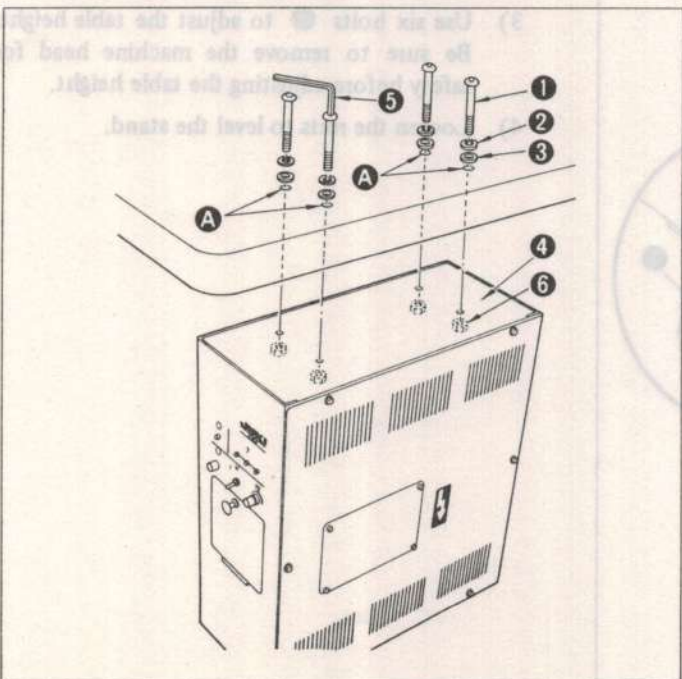
- 1) Attach the motor to the machine table ⑤, using bolt ①, flat washer ②, spring washer ③, and hexagon nut ④ as shown in the figure. (3 points)
- 2) When tightening the locknut, be sure that the motor pulley V groove meets the hand-wheel V groove.

2. Installing the thread stand



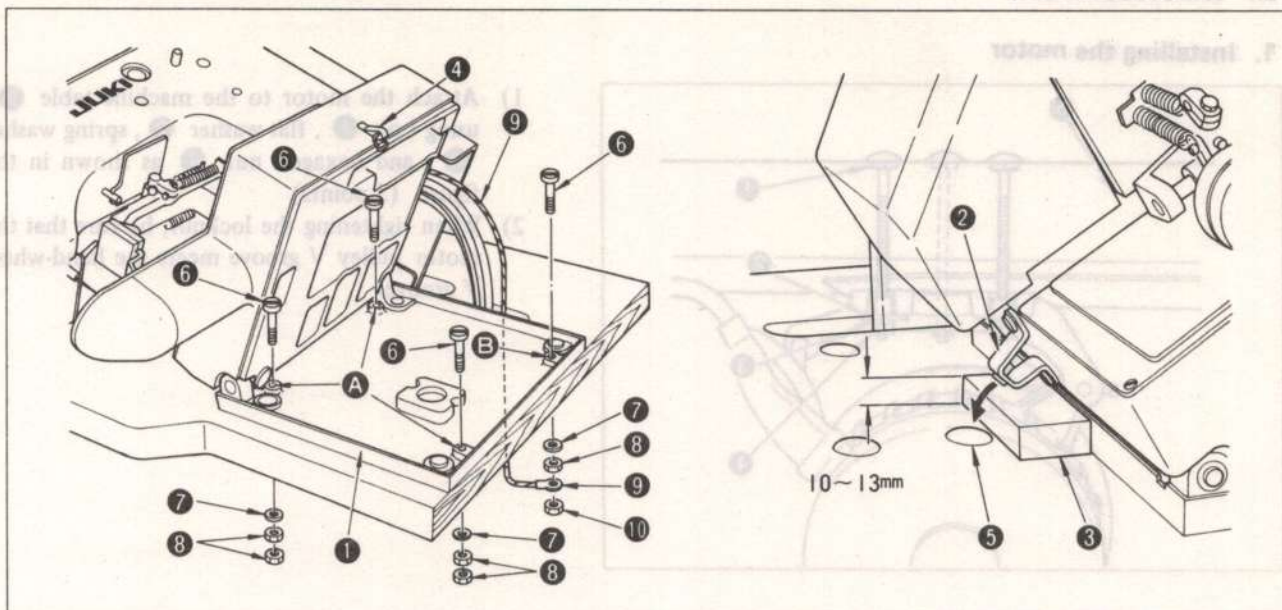
Assemble the thread stand, and put it in the hole in the top right corner of the machine table. Tighten locknut ① to fix the thread stand. When ceiling wiring is possible, pass the power cord through spool rest rod ②.


3. Installing the control box



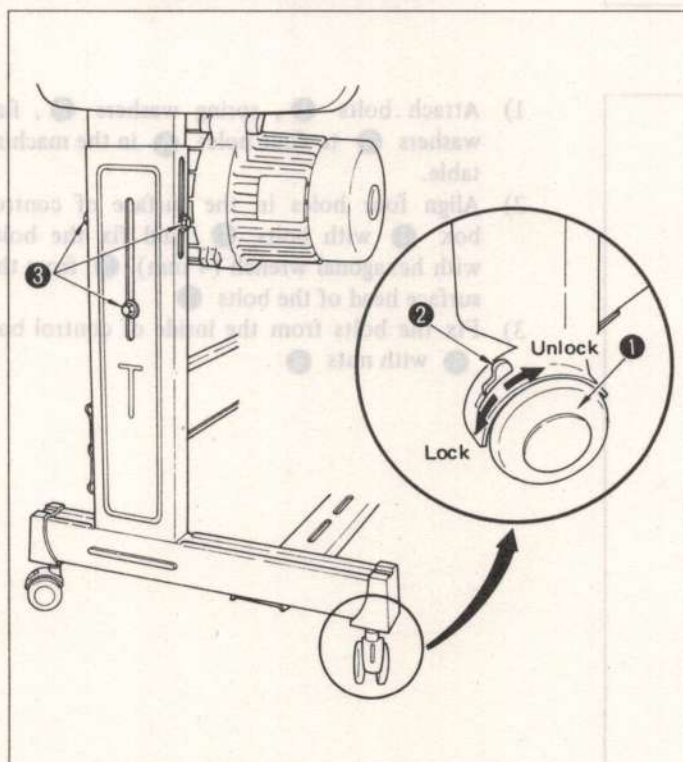
- 1) Attach bolts ①, spring washers ②, flat washers ③ to four holes A in the machine table.
- 2) Align four holes in the surface of control box ④ with bolts ①, and fix the bolts with hexagonal wrench (4 mm) ⑤ from the surface head of the bolts ①.
- 3) Fix the bolts from the inside of control box ④ with nuts ⑥.

4. Installing the machine head



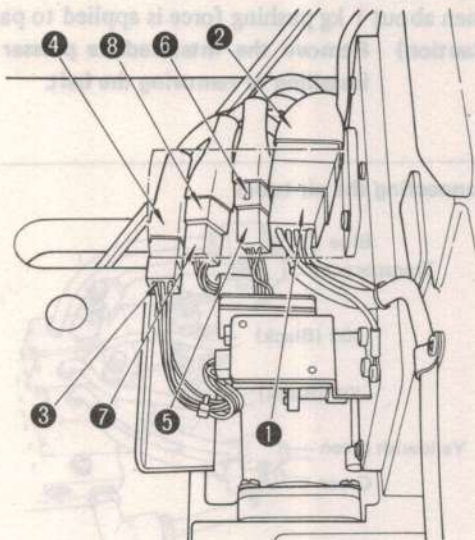
- 1) Align holes **A** and **B** in bed mounting base **1** with the four holes in the machine table, and fix the sewing machine on the machine table.
 - 2) Place "pad" **3** which is 10 mm to 13 mm thick under machine head supporter **2**.
 - 3) Release snap lock **4**, and tilt the machine head down, as illustrated. Make sure that machine head supporter **2** touches motor attaching bolt **5**.
- Note :** Take enough care to tilt the machine head, since the bed mounting base has not been fixed yet.
- 4) Insert bolts **6** supplied with the machine into the holes in the bed mounting base, then fix each bolt with a washer **7** and nuts **8** from under the machine table.
 - 5) Attach the end of the grounding cord **9** pulled out under the table to bolt **6** of point **B** (marked with ) with inserting nut **10**.

5. Installing the machine stand



- 1) Install the machine stand on a flat place.
- 2) Move down lever **2** to lock caster **1**.
- 3) Use six bolts **3** to adjust the table height. Be sure to remove the machine head for safety before adjusting the table height.
- 4) Loosen the nuts to level the stand.

6. Connecting the cords



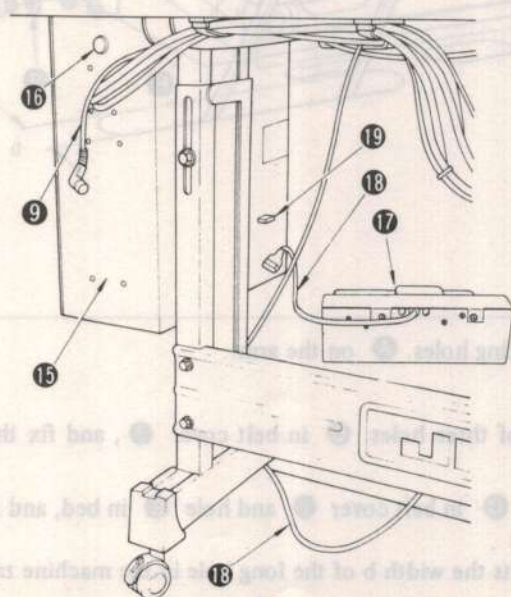
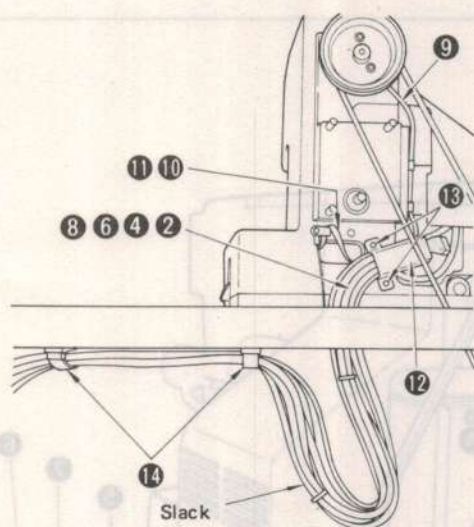
- ① Solenoid head side connector
(15P large, Connector color : White)
- ② Solenoid relay cord side connector
(15P large, Connector color : White)
- ③ Sensor head side connector
(15P small, Connector color : White)
- ④ Sensor relay cord side connector
(15P small, Connector color : White)
- ⑤ X-stepping motor head side connector
(6P, Connector color : Blue)
- ⑥ X-stepping motor relay cord side connector
(6P, Connector color : Blue)
- ⑦ Y-stepping motor head side connector
(6P, Connector color : White)
- ⑧ Y-stepping motor relay cord side connector
(6P, Connector color : White)

★ Head side

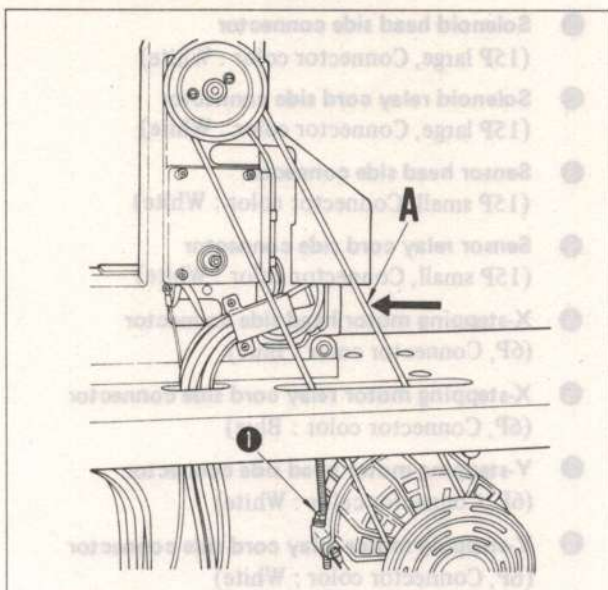
- 1) When connecting connectors ① with ②, and ③ with ④, check the size of the joining section of the connectors. And when connecting connectors ⑤ with ⑥, and ⑦ with ⑧, join the connectors in same color. Insert each connector until it will go no further.
- 2) Bind cords ②, ④, ⑥, ⑧, synchronizer cord ⑨, X-sensor cord ⑩, and intermediate presser magnet cord ⑪ together, put them into cord cover ⑫, and fix cord cover to bed with setscrews ⑬.
Make sure that no cord is caught between the cord cover and the bed, when fixing the cord cover to the bed.
- 3) Slacken the cords which has been bound, and pass them through two cable clips ⑭.

★ Control box side

- 4) Insert synchronizer cord ⑨ into connector ⑮ on control box ⑯.
- 5) Refer to page 36 for how to connect foot switch ⑰.



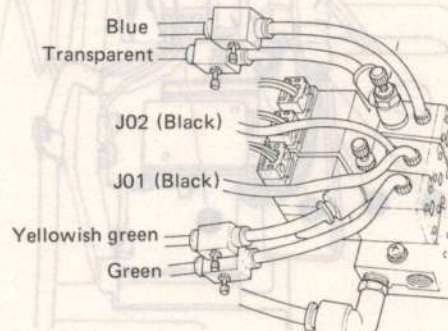
7. Adjusting the belt tension



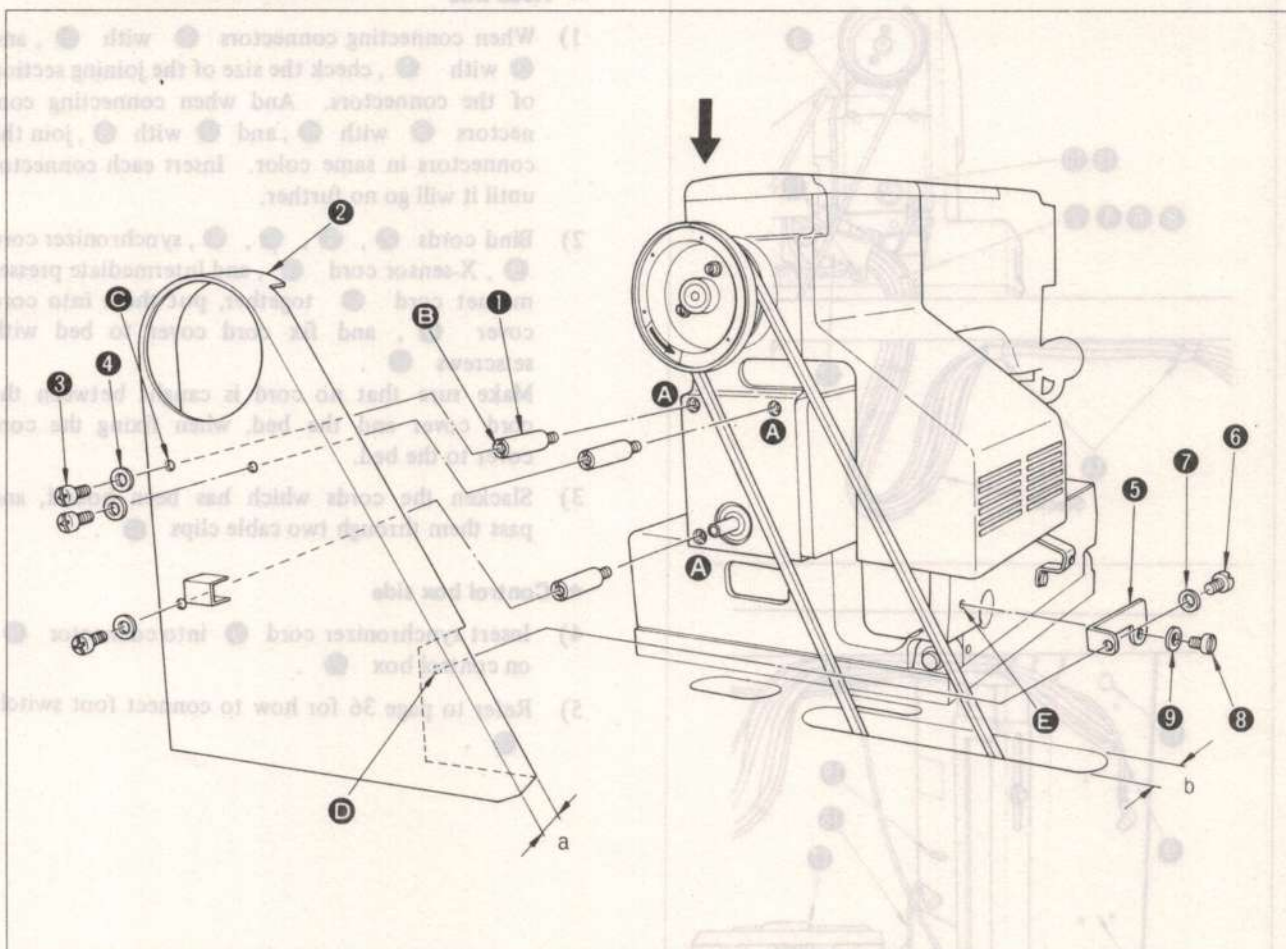
Adjust nut ① so that the belt slacks about 10 mm when about 1 kg pushing force is applied to part A.

(Caution) Remove the intermediate presser before installing or removing the belt.

Connecting the air-tubes

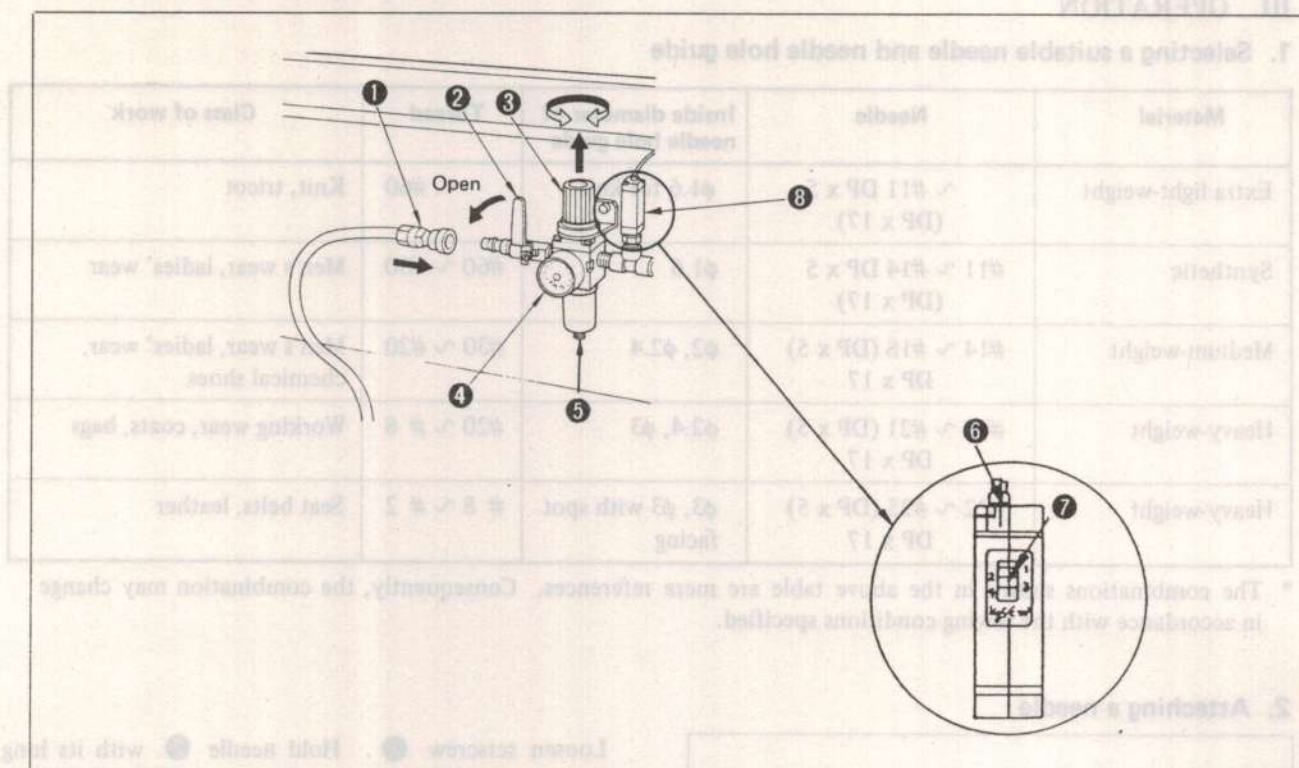


8. Installing the belt cover



- 1) Attach three screws ① supplied with the machine, to fixing holes ① on the arm.
 - 2) Install belt cover ② from the direction of the arrow ↓.
 - 3) Align each of three holes ② in screws ① and each of three holes ③ in belt cover ②, and fix them with setscrews ③ and washers ④.
 - 4) Align board ⑤ furnished with the machine with hole ④ in belt cover ② and hole ⑤ in bed, and fix them with setscrew ⑥ and ⑧, and with washer ⑦ and ⑨.
Make sure that the width a of the belt cover adequately fits the width b of the long hole in the machine table.
- * Length of setscrews ③, ⑥, ⑧ : ③, ⑧, ⑥ in descending scale of length.
All of the washers are the same type.

9. Connecting the air supply



- 1) Connect quick-coupling joint socket plug ① to the compressor to supply air to the machine from the compressor.
 - 2) Open air cock ②, and adjust the air pressure using air regulating knob ③ so that pressure gauge ④ indicates the air pressure of 5 to 5.5 kgf/cm². (The pressure gauge has been factory-adjusted at the time of delivery.) (Lifting air regulating knob ③ will allow you to turn it. Pushing the knob down will lock the knob.)
 - 3) Adjust the air pressure using ⑥ so that pointer ⑦ of pressure switch ⑤ indicates 4 kgf/cm². (The pressure switch has been factory-adjusted at the time of delivery.)
- * Close air cock ② and press push-button ⑤. Now the air pressure is set to 0 kgf/cm².

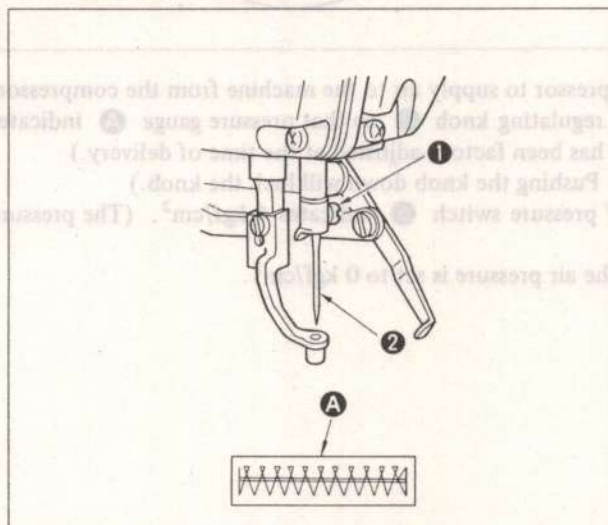
III. OPERATION

1. Selecting a suitable needle and needle hole guide

Material	Needle	Inside diameter of needle hole guide	Thread	Class of work
Extra light-weight	~ #11 DP x 5 (DP x 17)	$\phi 1.6$ for knit	~ #60	Knit, tricot
Synthetic	#11 ~ #14 DP x 5 (DP x 17)	$\phi 1.6$	#60 ~ #30	Men's wear, ladies' wear
Medium-weight	#14 ~ #18 (DP x 5) DP x 17	$\phi 2, \phi 2.4$	#30 ~ #20	Men's wear, ladies' wear, chemical shoes
Heavy-weight	#18 ~ #21 (DP x 5) DP x 17	$\phi 2.4, \phi 3$	#20 ~ # 8	Working wear, coats, bags
Heavy-weight	#22 ~ #25 (DP x 5) DP x 17	$\phi 3, \phi 3$ with spot facing	# 8 ~ # 2	Seat belts, leather

* The combinations shown in the above table are mere references. Consequently, the combination may change in accordance with the sewing conditions specified.

2. Attaching a needle



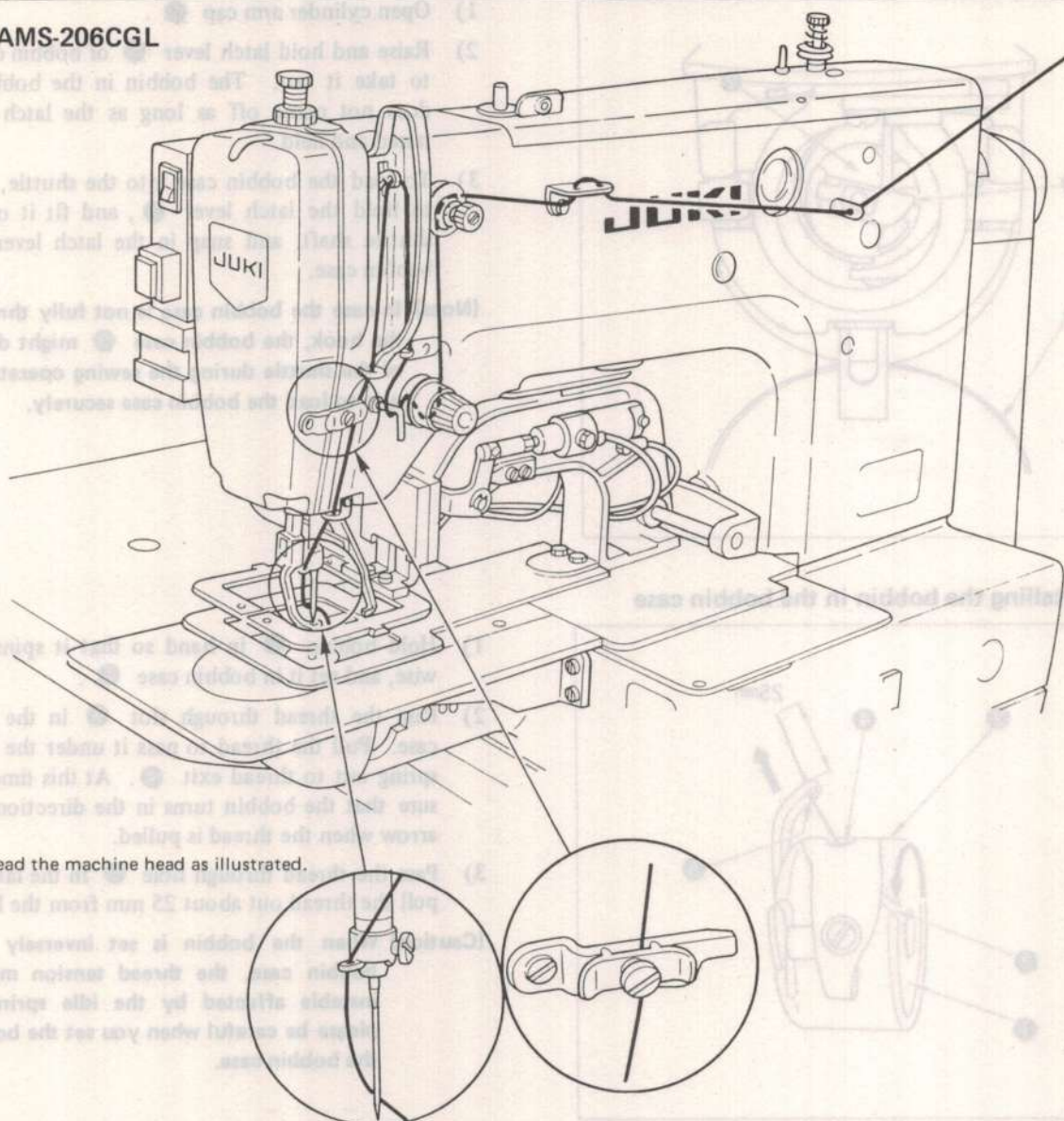
Loosen setscrew ①. Hold needle ② with its long groove facing toward you, and insert the needle fully into the hole in the needle bar. Tighten setscrew ①.

(Notes)

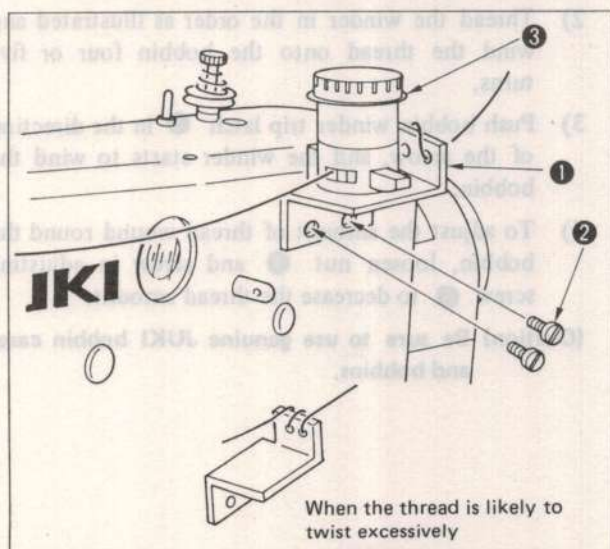
1. In case the needle thread stitches are made as shown by A, attach the needle so that the long groove of the needle is slightly turned to the left.
2. When sewing heavy-weight materials with synthetic fiber thread, use a super needle exclusive for synthetic fiber.
3. Be sure to attach the needle after the power switch has been turned OFF.

3. Threading the machine head

AMS-206CGL



4. Installing a silicon oil tank (only when you wish to use the tank with your machine)

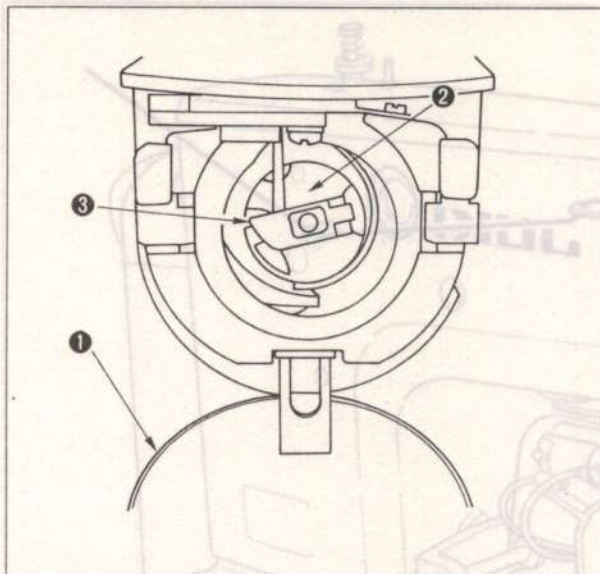


Fix silicon oil tank mounting base ① on the side face of the arm using screw ②. After the base has been fixed, secure silicon oil tank ③ on silicon oil tank mounting base ①. At this time, adjust the position of silicon oil tank ③ to allow the machine to be easily threaded. If you do not use a silicon oil tank, remove silicon oil tank mounting base ①.

(The silicon oil tank ③ is secured by magnet.)

If the thread is likely to twist excessively on silicon oil tank base ①, reverse the twining direction of the thread.

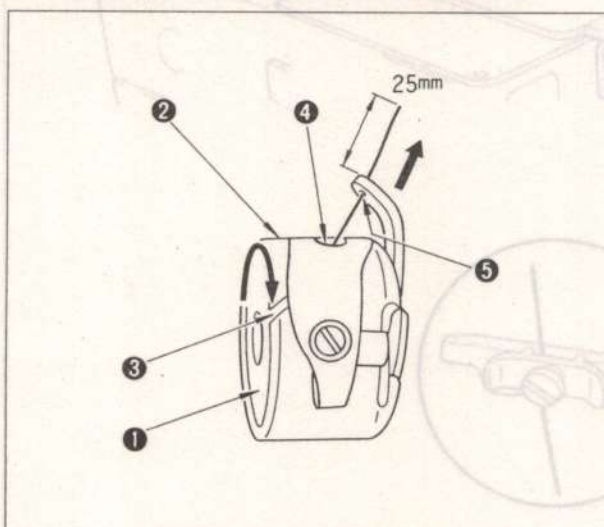
5. Installing and removing the bobbin case



- 1) Open cylinder arm cap ①.
- 2) Raise and hold latch lever ③ of bobbin case ② to take it out. The bobbin in the bobbin case does not come off as long as the latch lever is raised and held.
- 3) To load the bobbin case into the shuttle, be sure to hold the latch lever ③, and fit it onto the shuttle shaft, and snap in the latch lever of the bobbin case.

(Note) In case the bobbin case is not fully thrust in the hook, the bobbin case ② might drop out of the shuttle during the sewing operation. Be sure to load the bobbin case securely.

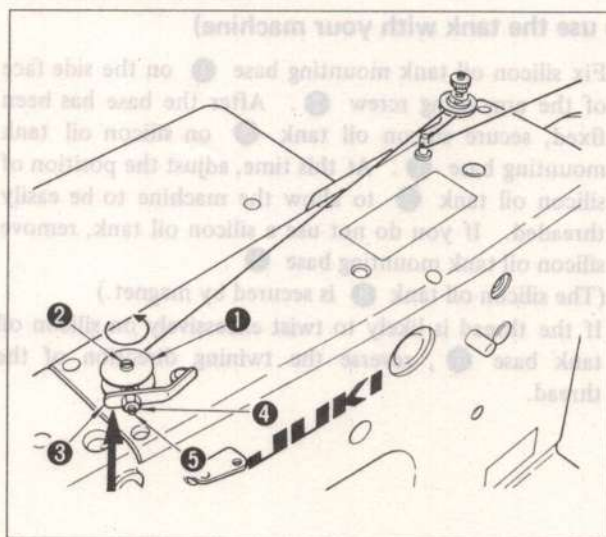
6. Installing the bobbin in the bobbin case



- 1) Hold bobbin ① in hand so that it spins clockwise, and set it in bobbin case ②.
- 2) Pass the thread through slot ③ in the bobbin case. Pull the thread to pass it under the tension spring out to thread exit ④. At this time, make sure that the bobbin turns in the direction of the arrow when the thread is pulled.
- 3) Pass the thread through hole ⑤ in the latch, and pull the thread out about 25 mm from the hole.

(Caution) When the bobbin is set inversely in the bobbin case, the thread tension might be instable affected by the idle spring. So please be careful when you set the bobbin in the bobbin case.

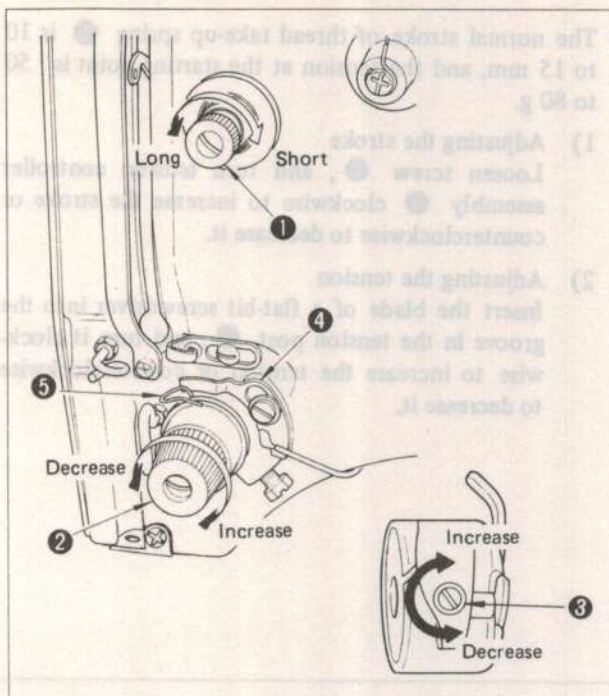
7. Winding a bobbin



- 1) Attach bobbin ① to bobbin winder spindle ②.
- 2) Thread the winder in the order as illustrated and wind the thread onto the bobbin four or five turns.
- 3) Push bobbin winder trip latch ③ in the direction of the arrow, and the winder starts to wind the bobbin.
- 4) To adjust the amount of thread wound round the bobbin, loosen nut ④ and screw in adjusting screw ⑤ to decrease the thread amount.

(Caution) Be sure to use genuine JUKI bobbin cases and bobbins.

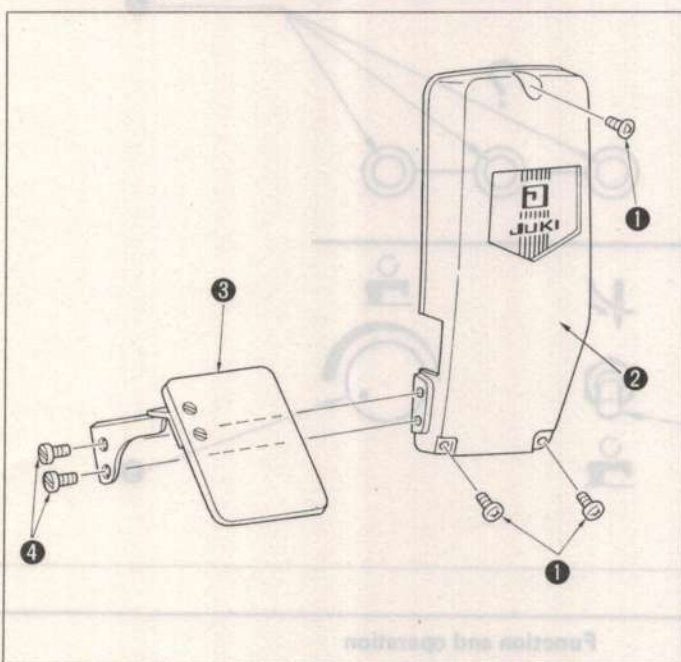
8. Thread tension



- 1) Adjusting the needle thread tension
Turn thread tension controller No. 1 ① clockwise to decrease the length of the thread which will remain on the needle after thread trimming, or counterclockwise to increase it. Minimizing the length of the thread which will remain on the needle as long as the thread does not slip off the needle.
Turn thread tension controller No. 2 ② clockwise to increase the needle thread tension, or counterclockwise to decrease it.
- 2) Adjusting the bobbin thread tension
Turn thread tension adjusting screw ③ clockwise to increase the bobbin thread tension, or counterclockwise to decrease it.

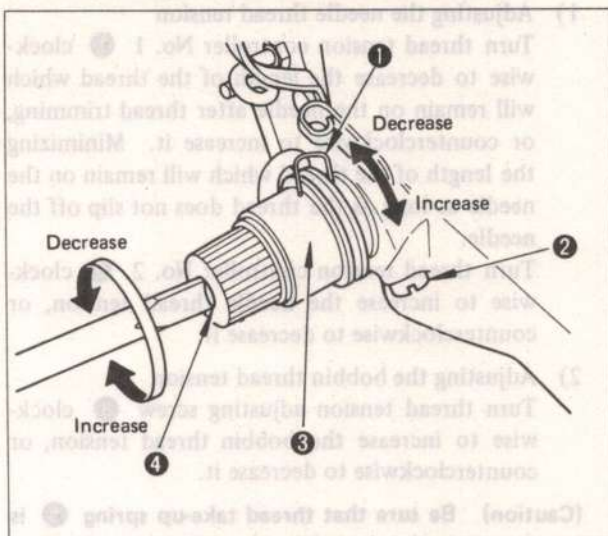
(Caution) Be sure that thread take-up spring ⑤ is in contact with thread breakage detector ④ in the absence of the needle thread. Also, be sure that the thread breakage detector does not touch any adjacent metallic components other than the thread take-up spring.

9. Installing the eye guard



- 1) Remove screws ①, and then remove face plate cover ②.
- 2) Attach eye guard ③ to face plate cover ② with screws ④.
- 3) Attach face plate cover ② in place with screws ①.

10. Adjusting the thread take-up spring

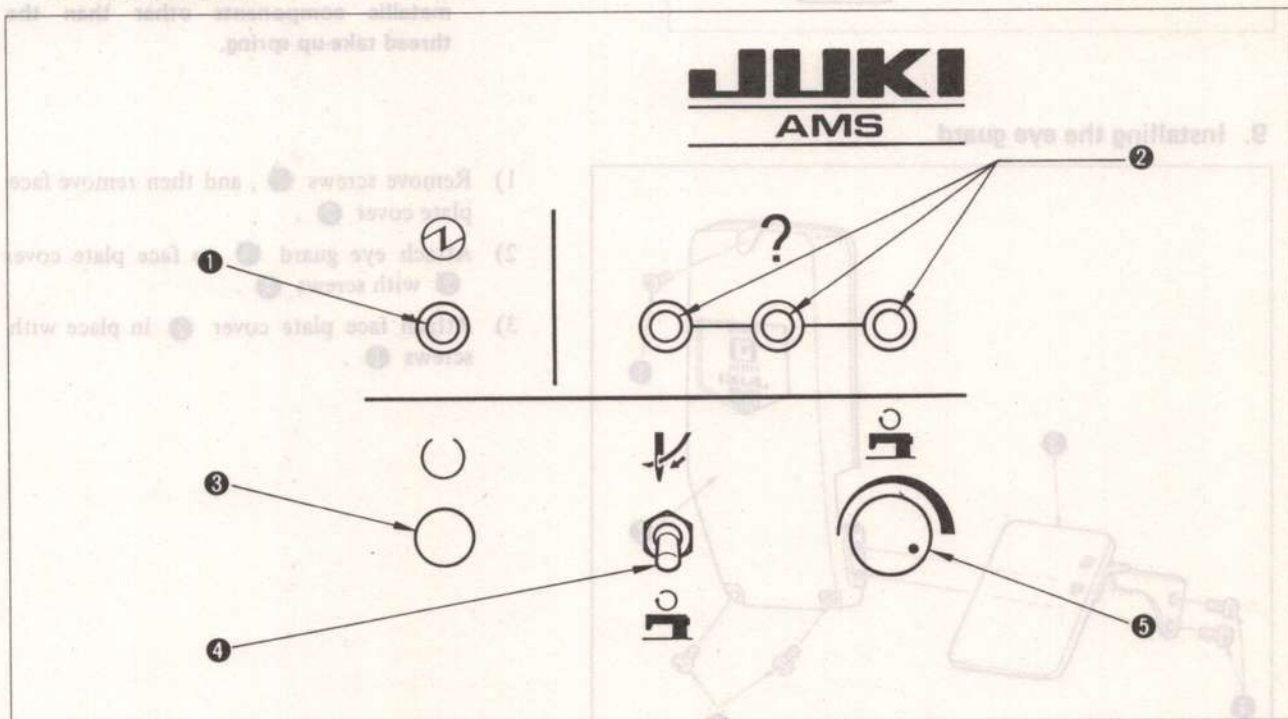






The normal stroke of thread take-up spring ① is 10 to 15 mm, and the tension at the starting point is 50 to 80 g.

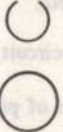








- 1) Adjusting the stroke
Loosen screw ②, and turn tension controller assembly ③ clockwise to increase the stroke or counterclockwise to decrease it.
- 2) Adjusting the tension
Insert the blade of a flat-bit screwdriver into the groove in the tension post ④, and turn it clockwise to increase the tension or counterclockwise to decrease it.

11. Control box

1) Operation panel



Panel indication	Function and operation
 	<p>① Power indicator lamp LED (Green) Pilot lamp indicating ON/OFF of the power switch. Lights when the power switch is turned ON.</p>
 	<p>② Error LED (Red) These three LED indicate incorrect operation, incorrect pattern setting, and disorder of the machine unit. See Page 16 "Error indications" for details. When sewing operation is performed in good order, the three LED lamps do not light.</p>


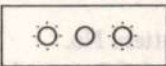

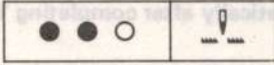
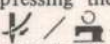
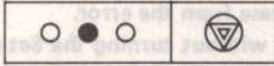
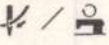
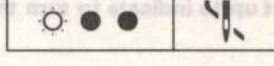

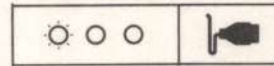
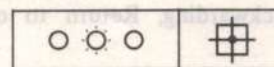
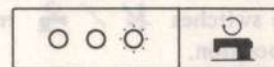
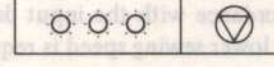

Panel indication	Function and operation
	<p>③ Set Ready switch</p> <p>Enables the machine to perform sewing work by reading pattern numbers and other conditions which have been set for sewing.</p> <p>Be sure to press the Set ready switch when turning the power switch ON, or after having set the pattern numbers for operation and enlarging/reducing scale of the original pattern size on X-Y axis. By pressing this switch, the following procedures will be performed.</p> <ol style="list-style-type: none"> 1. Check whether data P-ROM stores the data of selected pattern No. 2. Check whether the stitch length exceeds maximum of 6.2 mm through arithmetical operation using enlarging/reducing scale on X-Y axis. 3. The feeding frame comes down from a desired position, refers the origin, moves to the sewing start point, then lift up. 4. Put out all the lamps of Error LED, and permit the machine to perform the sewing operation. <p>(Notes) ① Be sure not to put your fingers under the feeding frame, for the feeding frame comes down automatically after completing 1. and 2. procedures mentioned above.</p> <p>② In case there is no change of pattern No. or enlarging/reducing scale on X-Y axis when turning the power switch ON, the patterns which have been set for the previous sewing operation will be performable by turning the Set ready switch ON.</p> <p>③ If there is something wrong with the procedures 1., 2. and 3., Error LED will light up and the following jobs shall be interrupted.</p> <p>See "Error indications" for the release from the error.</p> <p>④ In case the foot switch is treadled without turning the Set ready switch ON, in spite that the set data for operation has been changed after turning the power switch ON or during sewing, three lamps of Error LED will light up to indicate to turn the Set ready switch ON.</p>
	<p>④ Needle threading switch (Intermediate presser lowering switch)</p> <ol style="list-style-type: none"> 1. Intermediate presser lowering mechanism When sewing operation is performable, the feeding frame and intermediate presser comes down to make needle threading work easier by pressing the switch . Then pressing the switch  lifts up the feeding frame and intermediate presser to make sewing operation performable. 2. Thread trimming mechanism In case the operation is forced to be stopped with Emergency stop switch, thread trimming control function will not be effective. By pressing these switches  / , thread trimming will be performed and make the switches of Forwarding, Backwarding, Return to origin, effective. 3. Upper position reset mechanism In case that the intermediate presser is moved from its standard upper position after the Set ready switch has been turned ON and all the lamps of Error LED has been turned OFF, pressing the switches  /  returns the intermediate presser to its standard upper position.
	<p>⑤ Max. sewing speed limiting knob</p> <p>Sewing speed is automatically limited in accordance with the input data of stitch length or sewing patterns. In case that lower sewing speed is required, turn the knob counterclockwise.</p>

★ Error indications

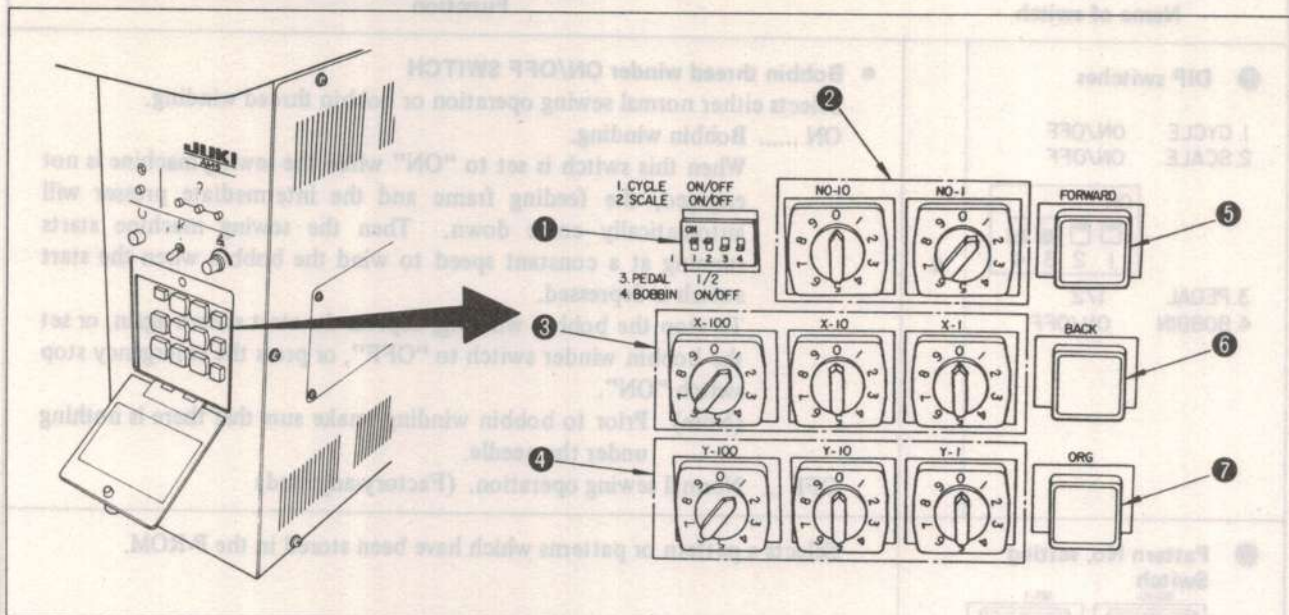
●..... light OFF

○..... light ON

⦿..... Flicker


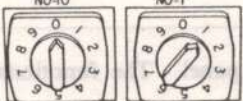

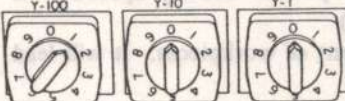
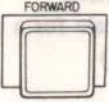
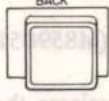
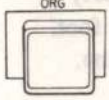
No.	Error indication	Description of error	How to reset
1	 Pattern No. error	Appears when P-ROM have not stored the data for the pattern No. which is selected to be set. Appears when some trouble has resulted in a read error.	Set a correct pattern. No. Check P-ROM of MAIN circuit board in electric box. (Check whether direction of pin is right, or set securely.)
2	 Pattern data error	Appears when the data P-ROM comes of the receptacle or it is improperly connected to the receptacle during sewing.	Turn OFF the power switch. Then connect the data P-ROM to the receptacle in the correct manner.
3	 Enlargement error	Appears when the stitch length exceeds 6.2 mm or when enlargement scale exceeds 255 times.	Correctly reset the enlarging scale on X and/or Y axis.
4	 Needle up error	Appears when the needle is not in its highest position.	1. Turn the handwheel until the error indication disappears. 2. When sewing operation is performable, the machine will rotate automatically until the needle stops in its highest position by pressing the needle threading switch  . (Be sure not to place anything under the needle because the machine rotate automatically.)
5	 Emergency stop error	Appears when the emergency switch is turned ON.	1. Turn the start switch ON again. 2. Press the needle threading switch  .
6	 Thread breakage error	Appears when the needle thread has broken.	Re-thread the machine head, press Return to origin switch and Forward or Backward switch before pressing the start switch.
7	 Sewing area error	Appears when the maximum sewing area 50 mm x 40 mm, during sewing operation or confirming job.	Releases by pressing Return to origin switch.
8	 Solenoid connector error	Appears when some poor connection of a solenoid connector has been detected.	Turn the power switch OFF, and check for loose solenoid connectors.
9	 Referring origin error	Appears when the origin cannot be referred after the Set ready has been turned ON.	Check the X and/or Y sensors. (check input and output of the sensors) Check the connectors of X and/or Y stepping motor and the stepping motor.
10	 Reverse rotation error	Appears when the machine rotate to the reverse direction, or some trouble has been detected in the synchronizer.	Change the motor rotating direction. Check the synchronizer.
11	 Machine lock synchronizer error	Appears when the sewing machine will not rotate, or some trouble has been detected in the synchronizer.	Turn the power switch OFF. Check the parts for those out of order, to replace with good ones. Check for the trouble causing the machine locked, and remove it. Then turn the power switch ON.
12	 Insufficient air pressure error	The pressure of the air supplied from the air source is lower than the pressure specified using the air pressure switch.	For the standard type of machine, set the SW8-1 to its ON position. Or, lower the pressure of the air supplied from the air source.

2) Operation panel switches and functions

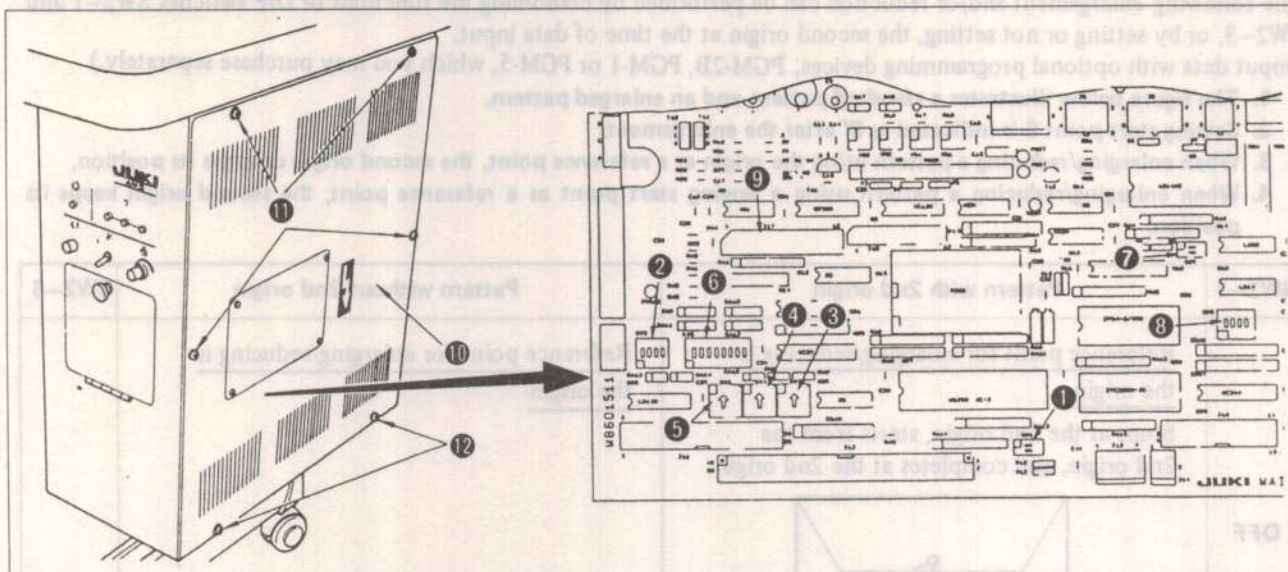


Open the lid of the control box, there are switches ① ~ ⑦ on the operation panel. The functions of the switches are as follows:

Name of switch	Function
<p>① DIP switches</p> <p>1. CYCLE ON/OFF 2. SCALE ON/OFF</p> <div data-bbox="289 1057 443 1148"> <p>ON</p> </div> <p>3. PEDAL 1/2 4. BOBBIN ON/OFF</p>	<p>● Cycle sewing ON/OFF switch Selects either lifting the feeding frame or keeping it lowered upon an order of pause in a pattern data. ON Feeding frame goes up when a pattern sewing operation is temporarily stopped. (Factory-set) This function permits a replacement of workpieces. It will lead to higher productivity. The sewing operation re-starts by pressing the presser start switch. OFF ... Feeding frame stays lowered when a pattern sewing operation is temporarily stopped.</p>
<p>2</p> <p>3</p>	<p>● Scale ON/OFF switch Selects whether scale setting switch is effective, or ineffective. ON Scale setting is ineffective. If you try to set scale for a pattern, the pattern remains its original size. (Factory-set) OFF ... Scale setting is effective on X and/or Y axis.</p> <p>● Pedal selector switch To be selected depending on the type of foot switches. ON In case of using optional pedal switch set A (M85905100A0), select ON side of this switch. Work clamp foot will stay lowered, when you release the pedal. (Two-pedal method) OFF ... In case of using standard foot switch. (Factory-set) One treadle on the pedal lowers the work clamp foot. Another treadle on the pedal actuates the machine.</p>

Name of switch	Function
<p>① DIP switches</p> <p>1. CYCLE ON/OFF 2. SCALE ON/OFF</p>  <p>3. PEDAL 1/2 4. BOBBIN ON/OFF</p>	<p>● Bobbin thread winder ON/OFF SWITCH</p> <p>Selects either normal sewing operation or bobbin thread winding.</p> <p>ON Bobbin winding.</p> <p>When this switch is set to "ON" while the sewing machine is not engaged, the feeding frame and the intermediate presser will automatically come down. Then the sewing machine starts running at a constant speed to wind the bobbin when the start switch is depressed.</p> <p>To stop the bobbin winding, depress the start switch again, or set the bobbin winder switch to "OFF", or press the emergency stop switch "ON".</p> <p>(Note) Prior to bobbin winding, make sure that there is nothing under the needle.</p> <p>OFF ... Normal sewing operation. (Factory-adjusted)</p>
<p>② Pattern No. setting Switch</p> 	<p>Selects a pattern or patterns which have been stored in the P-ROM.</p>
<p>③ X Scale setting switch</p>  <p>④ Y Scale setting switch</p> 	<p>Taking a pattern written in the P-ROM as 100%, the original pattern can be enlarged or reduced in the X-axis and/or Y-axis independently within a range of 1% ~ 255%.</p> <p>Two kinds of references; one is the origin, another is sewing start point, which are to be selected by the DIP switches on the MAIN printed circuit board in the control box.</p> <p>(Notes) 1. Whenever a pattern has been enlarged/reduced, make sure that the needle will not hit the work clamp foot by checking the motion of the needle with FORWARD/BACKWARD switch.</p> <p>2. With the Scale switch set to "Increase/decrease of stitch length", pattern enlargement cannot be done if the stitch length exceeds 6.2 mm. Maximum limit for enlarging scale is 255 %.</p>
<p>⑤ FORWARD switch</p> 	<p>When the FORWARD switch is pressed with the feeding frame down, the material is fed forward by one stitch. When the BACKWARD switch is pressed with the feeding frame down, the material is fed backward by one stitch.</p> <p>If these switches are kept depressed, the material is fed slowly for the first one stitch, after which it is automatically fed quickly.</p>
<p>⑥ BACKWARD switch</p> 	<p>● Check the operation</p> <p>Make sure that needle does not hit work clamp foot, after settings of switches on the operation panel (Pattern No. X and/or Y scale) have been changed.</p>
<p>⑦ Return to origin</p> 	<p>When this switch is pressed during checking the motions of the machine in action, or when the needle thread is broken, the feeding frame will automatically move to the sewing start point and then it will go up and stop.</p>

12. DIP switches on the printed circuit board



Remove four setscrews ⑪ and loosen two screws ⑫ in cover ⑩ of the control box. Remove cover ⑩ of the control box, then you will see DIP switches ① through ⑧ on the MAIN circuit board. Now, the functions of those switches are described as follows:

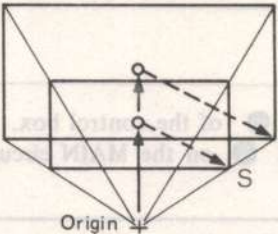
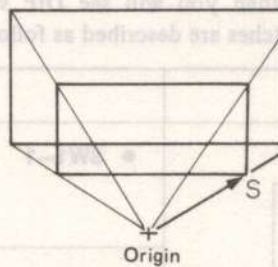
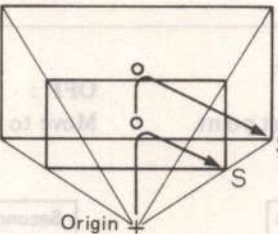
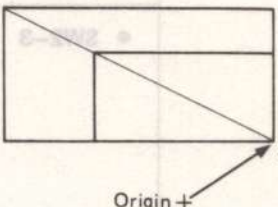
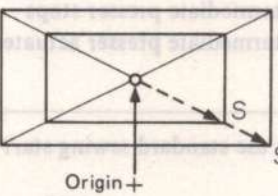
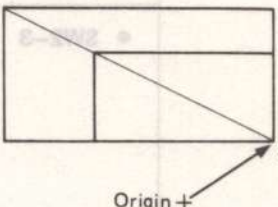
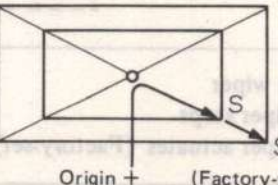
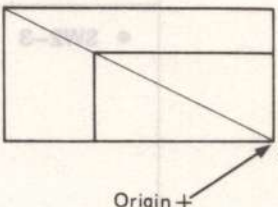
Switch name	Function
① DIP switch 1 (SW1) 	<ul style="list-style-type: none"> • SW1-1 Thread breakage detector ON/OFF ON The thread breakage detector does not work. OFF The thread breakage detector works. (Factory-set) • SW1-2 Not used.
② DIP switch 2 (SW2) 	<ul style="list-style-type: none"> • SW2-1 Changes start point ON : Move to sewing start point (Factory-set) OFF : Move to the second origin • SW2-2 Actuates/stops the intermediate presser (AMS-206C) ON The intermediate presser stops OFF The intermediate presser actuates. (Factory-set) • SW2-3 Enlarging/reducing the standard sewing start point and the standard origin. ON (Factory-set) OFF • SW2-4 Actuates/stops the wiper ON The wiper stops OFF The wiper actuates (Factory-set)


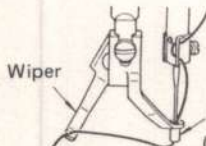












★ Kinds of enlargement and reduction

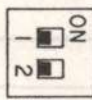
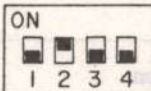


The following enlargement and/or reduction can be performed by combining the functions of DIP switches SW2-1 and SW2-3, or by setting or not setting, the second origin at the time of data input.


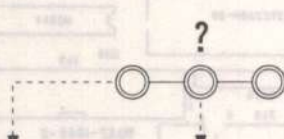
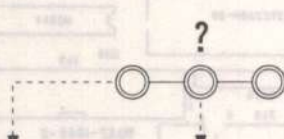
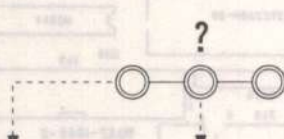
(Input data with optional programming devices, PGM-2B, PGM-1 or PGM-5, which you may purchase separately.)

- * 1. The figure below illustrates a standard pattern and an enlarged pattern.
- 2. Sewing start point S is indicated as S' after the enlargement.
- 3. When enlarging/reducing a pattern using the origin as a reference point, the second origin changes its position.
- 4. When enlarging/reducing a pattern using a sewing start point as a reference point, the second origin keeps its position.

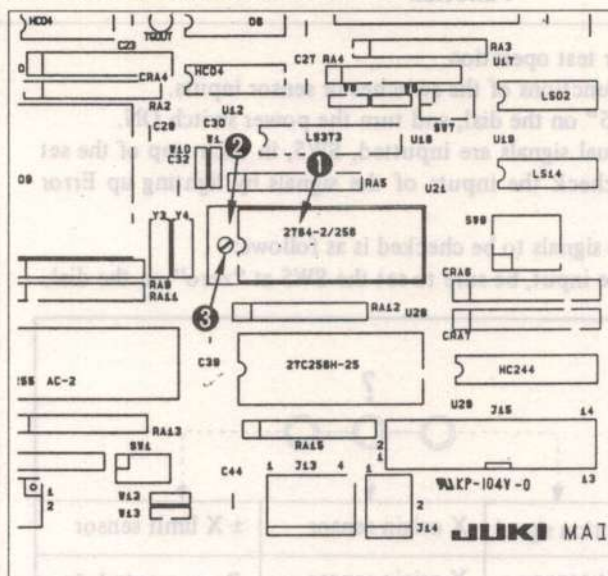
SW2-1	Pattern with 2nd origin	Pattern without 2nd origin	SW2-3
OFF	<p>Reference point for enlarging/reducing is the origin</p> <p>Stops at the 2nd origin, starts from the 2nd origin, and completes at the 2nd origin.</p> 	<p>Reference point for enlarging/reducing is the origin</p> 	OFF
ON	<p>Reference point for enlarging/reducing is sewing start point</p> <p>Stops at sewing start point, starts from the sewing start point, and completes at the sewing start point.</p> 		ON
OFF	<p>Reference point for enlarging/reducing is the 2nd origin</p> <p>Stops at the 2nd origin, starts from the 2nd origin, and completes at the 2nd origin.</p> 	<p>Reference point for enlarging/reducing is sewing start point</p> 	ON
ON	<p>Reference point for enlarging/reducing is the 2nd origin</p> <p>Stops at a sewing start point, starts from the sewing start point, and completes at the sewing start point.</p> 		ON

Name of switch	Function																														
<div>6 DIP switch 6 (SW6)</div> <div><div><div>ON</div><div><div><div><div></div><div></div><div></div><div></div><div></div><div></div><div></div><div></div></div><div>12345678</div></div></div><div>SW6</div></div></div>	<div>● SW6—1, 2 Selects cloth feed timing.</div> <table><tr><th>6—1</th><th>6—2</th><th>Material thickness</th></tr><tr><td>ON</td><td>ON</td><td>Below 2 mm</td></tr><tr><td>OFF</td><td>ON</td><td>2 mm or more but below 3 mm</td></tr><tr><td>ON</td><td>OFF</td><td>3 mm or more but below 4 mm</td></tr><tr><td>OFF</td><td>OFF</td><td>4 mm or more (factory-set)</td></tr></table> <div>● SW6—7 Wiper actuating point selecting function</div> <div>Normally, the wiper sweeps across the clearance between the intermediate presser and the needle. When sewing heavy-weight material, the clearance may be too small for the wiper to work. In this case, the wiper will be able to sweep across the clearance between the intermediate presser and the work-piece after the intermediate presser has reached the highest position in its stroke.</div> <div>ON The wiper sweeps between the intermediate presser and the workpiece after the intermediate presser has reached the highest position in its stroke. (Factory-set)</div> <div>The intermediate presser goes up after the wiper has swept across the clearance between the needle and the intermediate presser.</div> <div><div><div></div><div>(OFF) Material thickness: up to 3 mm</div></div><div><div></div><div>Wiper Intermediate presser (ON) Material thickness: 3 mm or more</div></div></div> <div>● SW6—5, 6 Selects direction of a pattern, lengthwise and crosswise</div> <table><tr><th>6—5</th><th>6—6</th><th>Direction of a pattern</th></tr><tr><td>OFF</td><td>OFF</td><td><div><div><div><div><div></div><div></div><div></div><div></div></div><div>Sewing start point</div><div>Origin</div><div>Standard (Factory-set)</div></div><div></div></div></div></td></tr><tr><td>ON</td><td>OFF</td><td><div>Turn a pattern to the right direction by 90° around the origin.</div><div></div></td></tr><tr><td>OFF</td><td>ON</td><td><div>Turn a pattern to the right direction by 90° around a sewing start point.</div><div></div></td></tr><tr><td>ON</td><td>ON</td><td><div>Turn a pattern by 180° round the origin.</div><div></div></td></tr></table> <div>● SW6—8 Selects adequate sewing speed when sewing operation is started.</div> <div>ON High speed :</div> <div>Set the switch to ON, when you require higher sewing speed for cycle sewing. It is to be noted that the high speed sewing might cause some troubles at sewing start, as a stitch skipping, or a thread slipping-off from the needle. Be careful in programming a new pattern, for such troubles depend on handling of a needle for a pattern, or a combination of a material cloth and a thread.</div> <div>OFF Standard speed (Factory-set)</div> <div>● SW6—3, 4 These switches are used for maintenance. Be sure not to use them.</div>	6—1	6—2	Material thickness	ON	ON	Below 2 mm	OFF	ON	2 mm or more but below 3 mm	ON	OFF	3 mm or more but below 4 mm	OFF	OFF	4 mm or more (factory-set)	6—5	6—6	Direction of a pattern	OFF	OFF	<div><div><div><div><div></div><div></div><div></div><div></div></div><div>Sewing start point</div><div>Origin</div><div>Standard (Factory-set)</div></div><div></div></div></div>	ON	OFF	<div>Turn a pattern to the right direction by 90° around the origin.</div> <div></div>	OFF	ON	<div>Turn a pattern to the right direction by 90° around a sewing start point.</div> <div></div>	ON	ON	<div>Turn a pattern by 180° round the origin.</div> <div></div>
6—1	6—2	Material thickness																													
ON	ON	Below 2 mm																													
OFF	ON	2 mm or more but below 3 mm																													
ON	OFF	3 mm or more but below 4 mm																													
OFF	OFF	4 mm or more (factory-set)																													
6—5	6—6	Direction of a pattern																													
OFF	OFF	<div><div><div><div><div></div><div></div><div></div><div></div></div><div>Sewing start point</div><div>Origin</div><div>Standard (Factory-set)</div></div><div></div></div></div>																													
ON	OFF	<div>Turn a pattern to the right direction by 90° around the origin.</div> <div></div>																													
OFF	ON	<div>Turn a pattern to the right direction by 90° around a sewing start point.</div> <div></div>																													
ON	ON	<div>Turn a pattern by 180° round the origin.</div> <div></div>																													

Name of switch	Function																																								
⑦ DIP Switch 7 (SW7)  SW7	<ul style="list-style-type: none">• SW7-1 Used for changing over the type of P-ROM. OFF For 2764 (EP-ROM) For 58C65 (EEP-ROM)• SW7-2 Not used.																																								
⑧ DIP Switch 8 (SW8)  SW8	<ul style="list-style-type: none">• SW8-1 Used for changing over the air pressure detecting function. ON The air pressure detecting function is not effective. OFF The air pressure detecting function is effective. (The switch has been set to this position at the time of delivery.) When using the machine with the pneumatic separately driven feeding frame mechanism set to operative, the machine detects the insufficient air pressure and gives the error indication. Be sure to set this switch to its ON position when the machine used is not the pneumatic type one.• SW8-2 Used for changing over the (Pneumatic) separately driven feeding frame function. ON The machine controls the pneumatic separately driven feeding frame function. (The switch has been set to this position at the time of delivery.) OFF Standard specification. (If the pressure of the feeding frame is insufficient and the pressure need to be controlled by air, set this switch to OFF. Then, the right- and left-frames of the feeding frame simultaneously go up and come down.) (Caution) If the air pressure is excessively increased, step-out of the machine may result. So be careful.• SW8-3 Used, in combination with the SW6-8, for further increasing the sewing speed.<table border="1"><thead><tr><th>SW6-8</th><th>SW8-3</th><th>1st stitch</th><th>2nd stitch</th><th>3rd stitch</th><th>4th stitch</th><th>5th stitch</th><th>6th stitch</th></tr></thead><tbody><tr><td>OFF</td><td>OFF</td><td>200</td><td>→ 600</td><td>→ 1000</td><td>→ 1400</td><td>→ 1800</td><td>→ 2000</td></tr><tr><td>ON</td><td>OFF</td><td>600</td><td>→ 600</td><td>→ 1000</td><td>→ 1400</td><td>→ 1800</td><td>→ 2000</td></tr><tr><td>OFF</td><td>ON</td><td>200</td><td>→ 2000</td><td></td><td></td><td></td><td></td></tr><tr><td>ON</td><td>ON</td><td>*2000</td><td></td><td></td><td></td><td></td><td></td></tr></tbody></table>• SW8-4 Used for changing over the feeding frame position at the sewing end. ON The feeding frame is kept lowered at the sewing end. (The feeding frame can be raised by depressing the feeding frame switch.) OFF The feeding frame goes up at the sewing end. (The switch has been set to this position at the time of delivery.)	SW6-8	SW8-3	1st stitch	2nd stitch	3rd stitch	4th stitch	5th stitch	6th stitch	OFF	OFF	200	→ 600	→ 1000	→ 1400	→ 1800	→ 2000	ON	OFF	600	→ 600	→ 1000	→ 1400	→ 1800	→ 2000	OFF	ON	200	→ 2000					ON	ON	*2000					
SW6-8	SW8-3	1st stitch	2nd stitch	3rd stitch	4th stitch	5th stitch	6th stitch																																		
OFF	OFF	200	→ 600	→ 1000	→ 1400	→ 1800	→ 2000																																		
ON	OFF	600	→ 600	→ 1000	→ 1400	→ 1800	→ 2000																																		
OFF	ON	200	→ 2000																																						
ON	ON	*2000																																							
③ Rotary DIP Switch 3 (SW3) ④ Rotary DIP Switch 4 (SW4)  SW4  SW3	The SW3 and SW4 are used for maintenance when adjusting the origin. Do not change the setting of these switches.																																								

Switch	Function																												
<div>⑤ Rotary DIP switch 5 (SW5)</div> <div></div> <div>SW5</div>	<div>● This switch is used for test operation.</div> <div>1. In case checking the functions of the switches or sensor inputs.</div> <div>1) Set SW5 at "1 ~ 5" on the dial, and turn the power switch ON.</div> <div>2) While the individual signals are inputted, SW5, in each step of the set value, serves to check the inputs of the signals by lighting up Error LED.</div> <div>The details of the signals to be checked is as follows:</div> <div>3) After checking the input, be sure to set the SW5 at "zero" on the dial.</div> <div><table><tr><th>Display LED</th><th colspan="3"></th></tr><tr><th>Set value of SW5</th><th></th><th></th><th></th></tr><tr><td>1</td><td>Air detection signal</td><td>X origin sensor</td><td>± X limit sensor</td></tr><tr><td>2</td><td>± Y limit sensor</td><td>Y origin sensor</td><td>Presser switch 2</td></tr><tr><td>3</td><td>Forward switch</td><td>Backward switch</td><td>Return to origin switch</td></tr><tr><td>4</td><td>Presser switch 1</td><td>Start switch</td><td>Thread breakage detection signal</td></tr><tr><td>5</td><td>Up detection signal</td><td>Down detection signal</td><td>Emergency stop switch</td></tr></table></div> <div>2. In case of checking the position of the origin</div> <div>1) Set SW5 at "7" on the dial with the power switch OFF. Then turn the power switch ON.</div> <div>2) Treadling the foot switch lowers the feeding frame, automatically refers the origin, stops at the origin, and raise the feeding frame.</div> <div>3) After checking the position of the origin, be sure to set the SW5 at "zero" on the dial.</div> <div>3. When the AMS-206A is used as an automatic sewing machine.</div> <div>With the power to the sewing machine OFF, set the SW5 to graduation "B".</div> <div>Then, the machine will perform the following setps of operaton.</div> <div>1) When the power to the machine is turned ON, the machine will retrieve the origin and travel to the sewing start point according to the data of the X/Y scale. (You may skip operation of the SET READY switch.)</div> <div>2) Upon completion of the sewing, the machine will retrieve the origin and travel to the sewing start point.</div> <div>3) For the machine with the 1-pedal unit, the feeding frame is kept to its ON position if the work clamp switch is set to ON at the sewing end.</div> <div>Refer to the description of the output sewing machine signals for modification for the detailed information on the signals which tell the state of the sewing machine.</div> <div>(Caution)</div> <div>1. For the normal sewing operation, run the machine with the SW5 set at graduation "0".</div> <div>2. Graduations "6", "8", "9", "A" and "C through F" are for maintenance. Do not used them.</div>	Display LED				Set value of SW5				1	Air detection signal	X origin sensor	± X limit sensor	2	± Y limit sensor	Y origin sensor	Presser switch 2	3	Forward switch	Backward switch	Return to origin switch	4	Presser switch 1	Start switch	Thread breakage detection signal	5	Up detection signal	Down detection signal	Emergency stop switch
Display LED																													
Set value of SW5																													
1	Air detection signal	X origin sensor	± X limit sensor																										
2	± Y limit sensor	Y origin sensor	Presser switch 2																										
3	Forward switch	Backward switch	Return to origin switch																										
4	Presser switch 1	Start switch	Thread breakage detection signal																										
5	Up detection signal	Down detection signal	Emergency stop switch																										

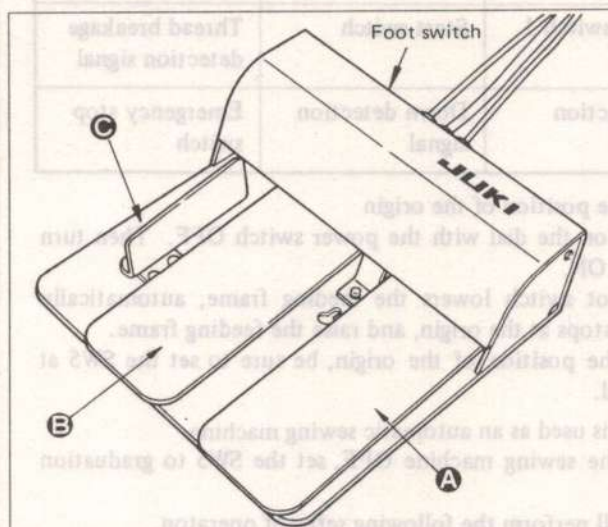
13. How to replace data P-ROM



1. Data P-ROM ① is fixed on IC socket ② on the MAIN printed circuit board in the control box.
2. Turning cam ③ of IC socket ② counterclockwise, P-ROM ① will come off.
3. Insert a new P-ROM into IC socket ②, turn cam ③ of IC socket clockwise, and fix P-ROM. (Ensure that the P-ROM will not easily detach from the IC socket.)

(Caution) Be sure to turn the power switch OFF, when replacing P-ROM.

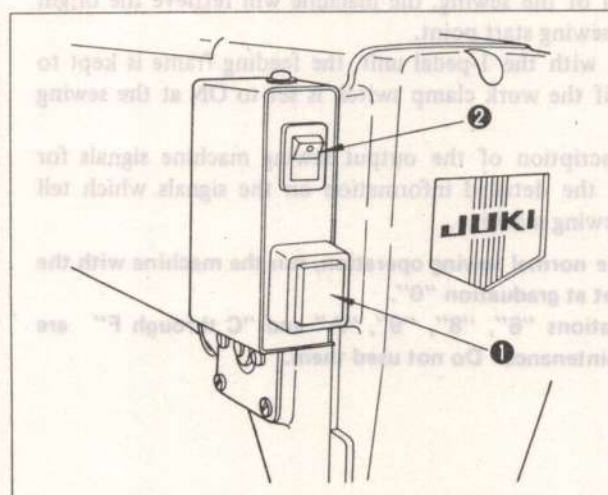
14. Foot switch



- 1) Depress pedal ① (freeing frame switch), and the feeding frame will come down. Release the pedal, and the feeding frame will go up. (The foot switch has been factory-adjusted to operate in the aforementioned way at the time of delivery.)
- 2) Depress pedal ② when the right or left frame of the feeding frame has been lowered using pedal ①, and the remaining frame of the feeding frame will come down.
- 3) Further depress pedal ② or depress pedal ③, and the sewing machine will start running.

(Caution) The foot pedals are operated differently according to the connection of the connectors. Refer to "How to operate the PK-47 3-pedal unit" on page 36 for details.

15. Emergency stop switch and Wiper ON/OFF switch



① Emergency stop switch

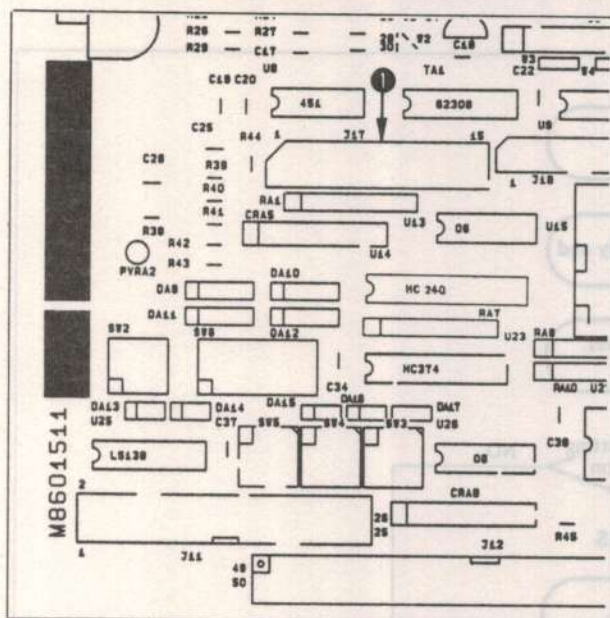
Press this switch to stop the cloth feed or sewing mechanisms of the machine during operation.

② Wiper ON/OFF switch

Turning the wiper switch OFF, the wiper stops its job.

For normal sewing operations, turn the wiper switch ON to perform the job.

16. External output signals (sewing machine signals)



Various signals are output so as to check the state of sewing machine.

The following signals are output to connector J17 ①.

- J17 -1: Sewing signal
- 2: Feeding frame signal
- 3: Up position signal
- 4: Down position signal
- 5: Motor stop signal
- 6: Error signal
- 7: Blank
- 8: Switch of the feeding frame
- 9: Starting switch
- 10: Emergency stop switch
- 11: +5V
- 12: GND
- 13: GND
- 14: GND
- 15: Blank

Use the following connectors to output the signals.

Connector 15P: MITSUMI M86M87-15

Pin terminal: MITSUMI M31C8-4

Contact your nearest dealer for further information, if necessary.

Sewing signal:

Output when the start switch is turned ON until the sewing operation is completed and the feeding frame is turned OFF.

Feeding frame signal:

Output as long as the feeding frame is turned ON.

Up position signal:

Output when the needle is in its highest position.

Down position signal:

Output when the needle is in its lowest position.

Motor stop signal:

Output as long as the electronic-stop motor is stopped.

Error signal:

Output when a sewing machine error occurs simultaneously with the corresponding error message.

Switch of the feeding frame: When this switch is turned ON (set to the 0V position), the feeding frame will come down.

Start switch: When this switch is turned ON (set to the 0V position), the sewing machine will start running.

Emergency stop switch: When this switch is turned ON (set to the 0V position), the sewing machine will stop sewing. The function of this switch is the same as that of the emergency stop switch mounted on the sewing machine head.

The functions of these switches are same as those of the pedal switches.

17. Interchangeability of the data ROM with the programming device

Programming device	PGM-5	PGM-2B	PGM-2
P-ROM			
EP-ROM for AMS-205A/-206A	X	○	○
EEP-ROM for AMS-205B/C, AMS-206B/C	○	○	X

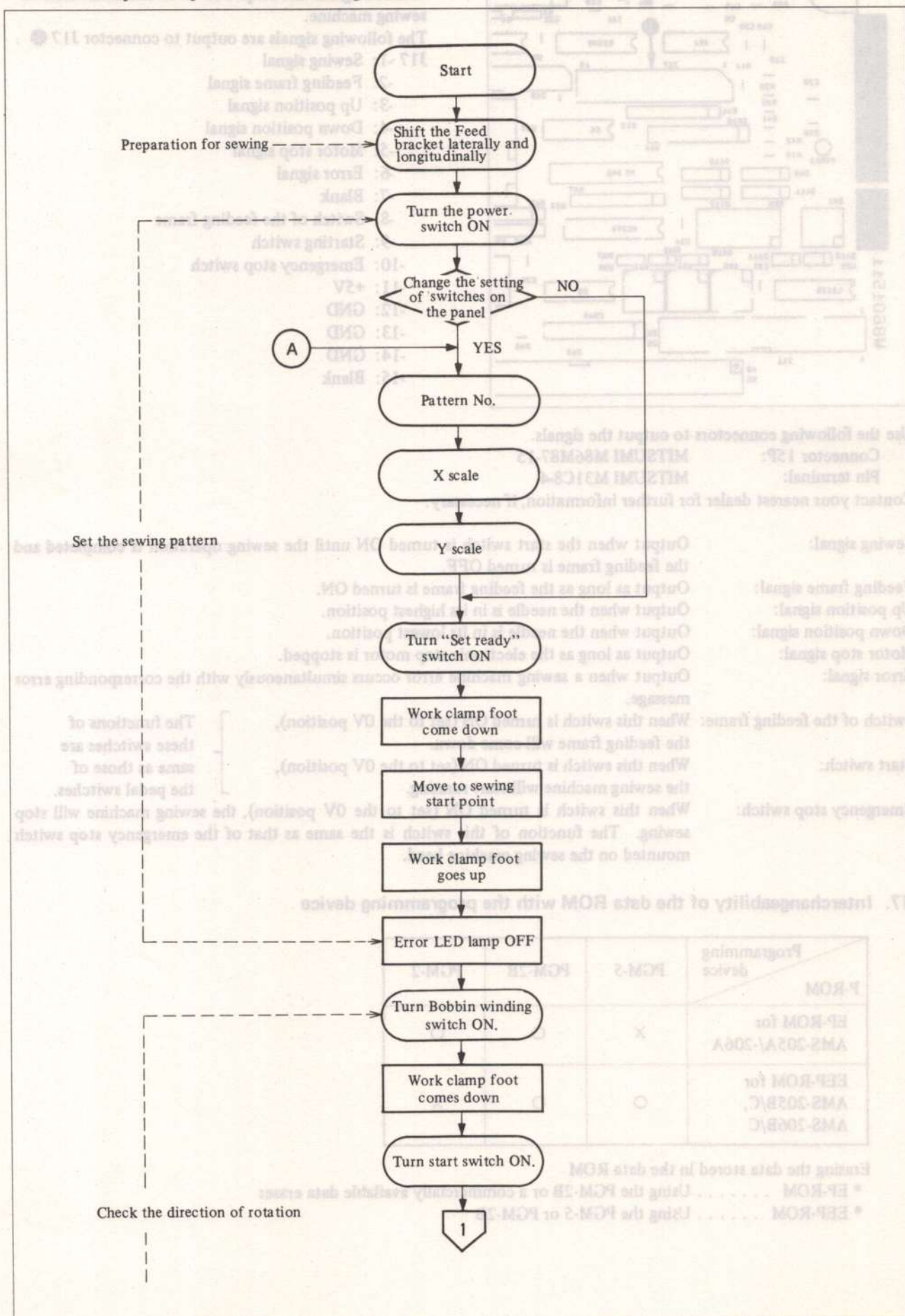
Erasing the data stored in the data ROM

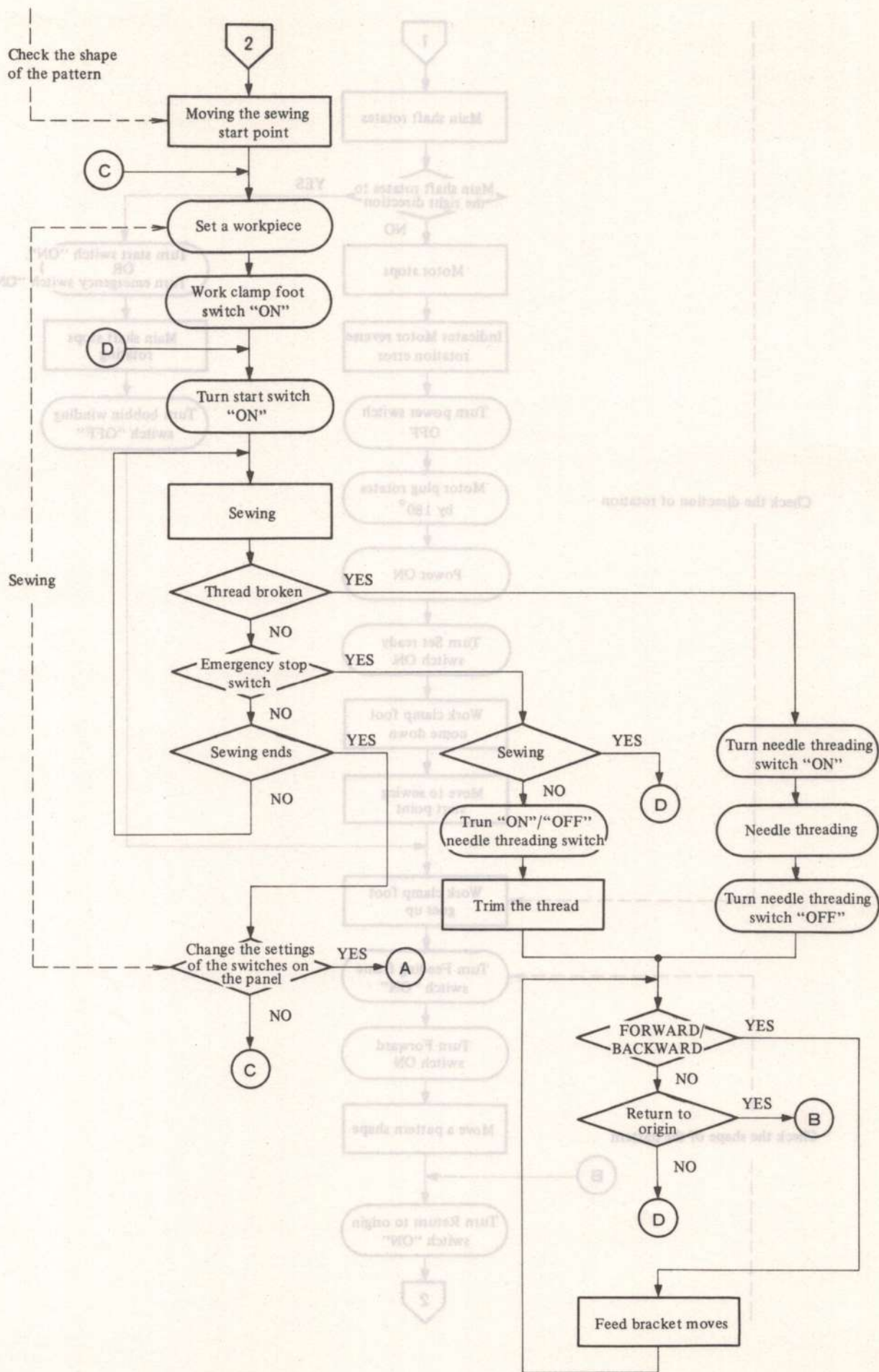
* EP-ROM Using the PGM-2B or a commercially available data eraser

* EEP-ROM Using the PGM-5 or PGM-2B

18. Operation

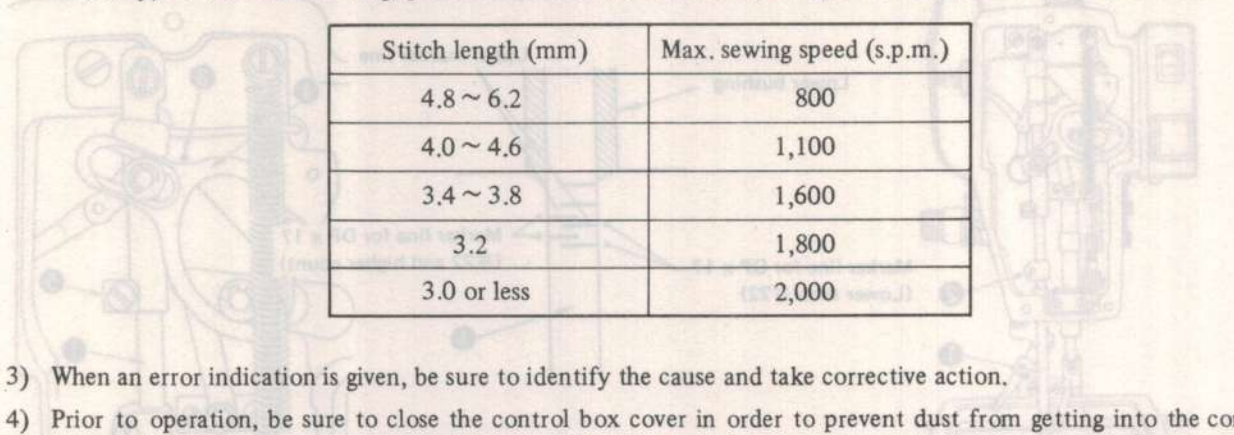
Follow the operation procedure flow chart given below.





★ Cautions in Operation

- 1) Before sewing a new pattern or a newly enlarged pattern, be sure to carry out trial sewing to check the pattern size with respect to the feeding frame.
- 2) The maximum sewing speed varies according to the stitch length.
The maximum sewing speed is automatically limited as shown in the table below according to the stitch length. If necessary, the maximum sewing speed can also be limited manually using the max. speed limit control knob.

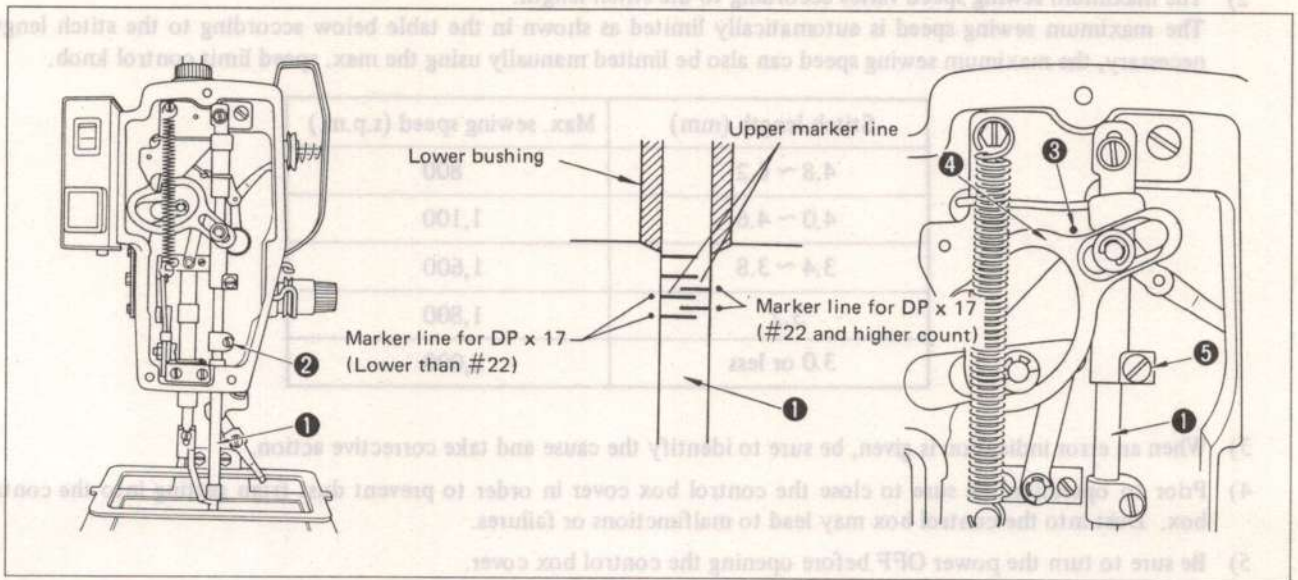


Stitch length (mm)	Max. sewing speed (s.p.m.)
4.8 ~ 6.2	800
4.0 ~ 4.6	1,100
3.4 ~ 3.8	1,600
3.2	1,800
3.0 or less	2,000

- 3) When an error indication is given, be sure to identify the cause and take corrective action.
- 4) Prior to operation, be sure to close the control box cover in order to prevent dust from getting into the control box. Dust into the control box may lead to malfunctions or failures.
- 5) Be sure to turn the power OFF before opening the control box cover.
- 6) Avoid checking the control circuitry by a tester, or else the tester voltage may be applied to a semiconductor component, and the component may be damaged.
- 7) Be sure that there is no obstacle under the needle before depressing the start switch to wind a bobbin.
- 8) After turning ON the preparation switch, the operation is carried on. And upon the completion of the operation, the feeding frame comes down automatically.
So be sure not to place your fingers between the feeding frame.
- 9) Avoid pulling the workpiece while sewing. This may prevent correct needle entry. If X or Y needle entry point should be dislocated, press the Set Ready switch twice to go back to the sewing start point.
- 10) Be careful sufficiently to handle a P-ROM. If a foot section of a P-ROM is bent or broken, it cannot be used any more. If an P-ROM is exposed to the fluorescent lamp or the sun light for a long time with the ultraviolet rays shield seal is removed, the data stored in the P-ROM might be erased. Be sure to use an P-ROM with the ultraviolet rays shield seal stuck.

IV. MAINTENANCE

1. Adjusting the height of the needle bar



- 1) Bring needle bar ① to the lowest point of its stroke. Loosen needle bar connection screw ②, and adjust so that the upper marker line engraved on the needle bar aligns with the bottom end of the needle bar lower bushing. Needle bar ① has three different kinds of marker lines (upper marker line and a pair of lower marker lines) engraved on it in accordance with the needle sizes.

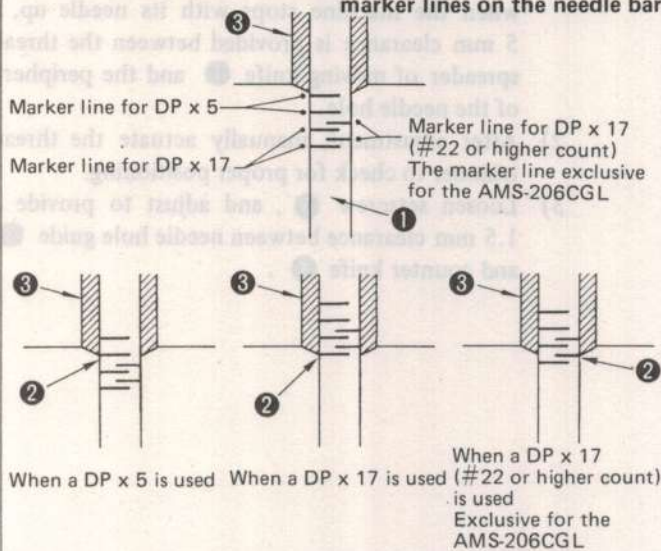
(Caution) The pair of lower marker lines are used for the "Adjusting the needle-to-shuttle relationship."

After adjustment, move needle bar ① up to its highest position. Loosen screw ⑤, and adjust so that cam ④ is positioned as illustrated with respect to red marker dot ③.

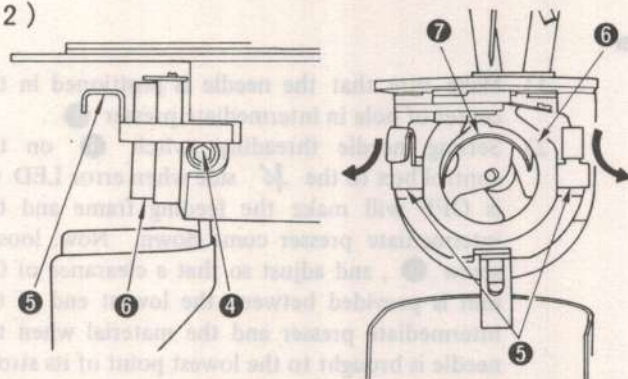
(Caution) After adjustment, be sure to turn the handwheel to check for its smooth rotation. Make the hook timing slightly slower for sewing floppy materials, or make it slightly faster for sewing heavy-weight materials to adjust the hook timing.

2. Adjusting the needle-to-shuttle relationship

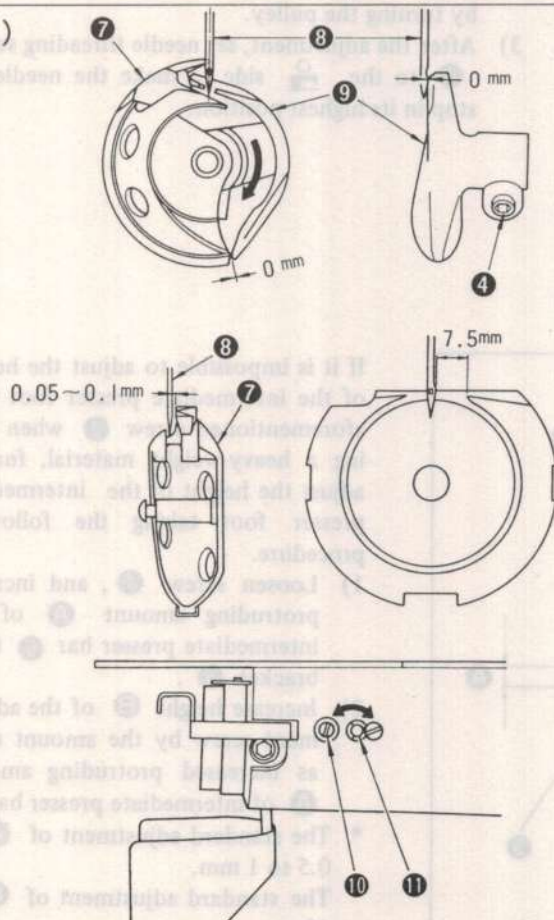
1) (Relationship between the needle and marker lines on the needle bar)



2)



3)



- 1) Turn the pulley by hand so that lower marker line ② on the ascending needle bar ① is aligned to bottom end of needle bar lower bushing ③.

(Caution) The needle bar has two pairs of marker lines in accordance with the needle sizes.

The lower ones of the two lines in the respective pairs are called the lower marker lines.

- 2) Loosen screw ④ (with hexagon socket head) in the shuttle driver. Open right and left hooks ⑤ in the direction of the arrows while pulling them toward you, and remove shuttle race ring ⑥.

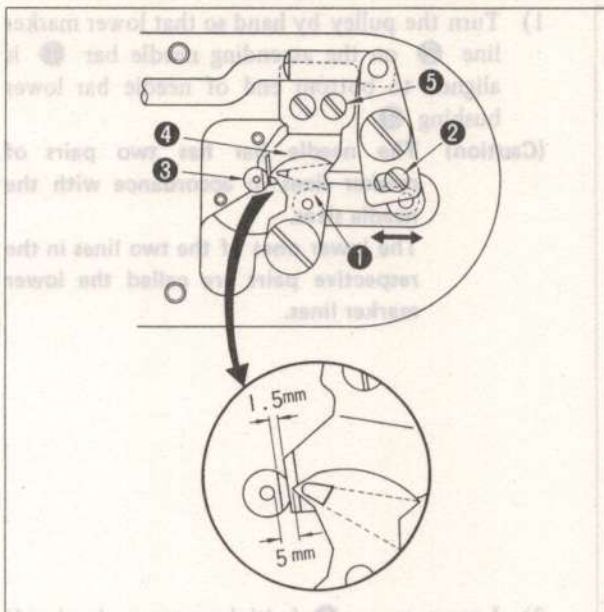
(Caution) At this time, be careful not to let shuttle ⑦ come off and fall.

- 3) Adjust so that the point of shuttle ⑦ meets the center of needle ⑧, and that the clearance between the front end surface of shuttle driver ⑨ and the needle becomes 0 mm since the front end face of shuttle driver ⑨ serves to prevent the needle from bending. After adjustment, tighten screw ④ in the shuttle driver.

- 4) Loosen shuttle race setscrew ⑩, and adjust the longitudinal position of the shuttle race. To do this adjustment, turn shuttle race adjusting shaft ⑪ clockwise or counter-clockwise to provide a 0.05 ~ 0.1 mm clearance between needle ⑧ and the point of shuttle ⑦.

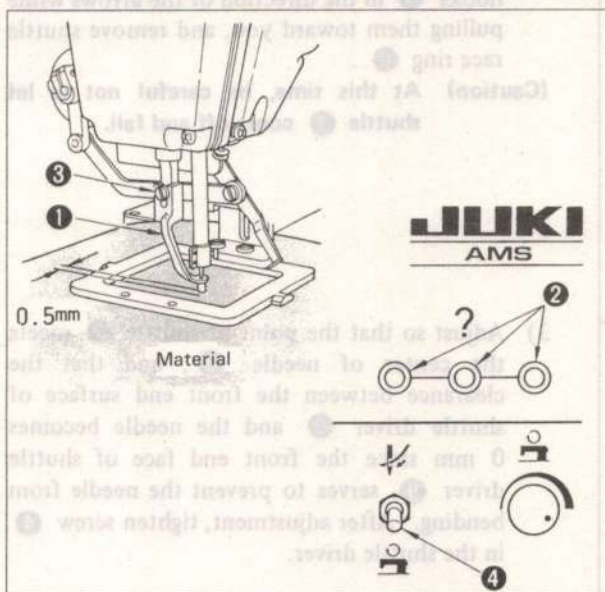
- 5) After adjusting the longitudinal position of shuttle race, further adjust to provide a 7.5 mm clearance between the needle and the shuttle race. Tighten setscrew ⑩.

3. Adjusting the moving knife and the counter knife



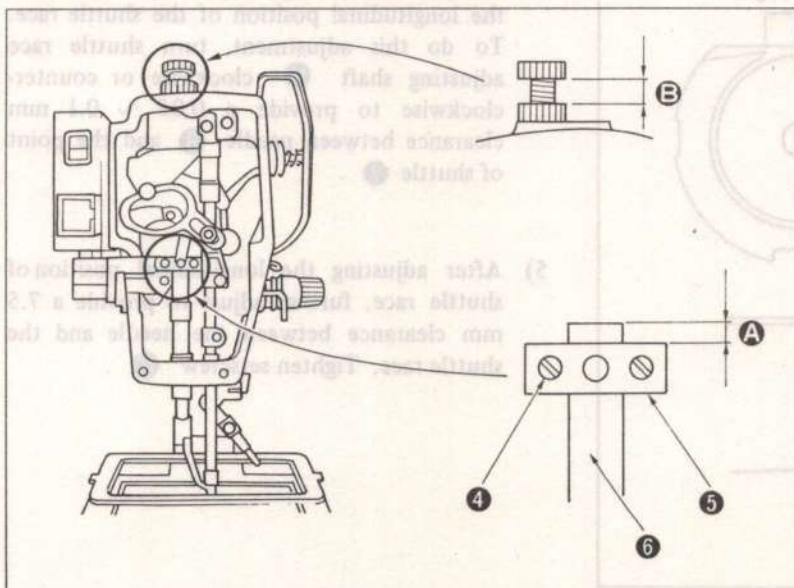
- 1) Loosen adjusting screw ②, and adjust so that, when the machine stops with its needle up, a 5 mm clearance is provided between the thread spreader of moving knife ① and the periphery of the needle hole.
- 2) After adjustment, manually actuate the thread trimmer to check for proper positioning.
- 3) Loosen setscrew ⑤, and adjust to provide a 1.5 mm clearance between needle hole guide ③ and counter knife ④.

4. Adjusting the height of the intermediate presser



- 1) Make sure that the needle is positioned in the center of hole in intermediate presser ①.
- 2) Setting needle threading switch ④ on the control box to the \swarrow side when error LED ② is OFF will make the feeding frame and the intermediate presser come down. Now, loosen screw ③, and adjust so that a clearance of 0.5 mm is provided between the lowest end of the intermediate presser and the material when the needle is brought to the lowest point of its stroke by turning the pulley.
- 3) After the adjustment, set needle threading switch ④ to the \searrow side to make the needle bar stop in its highest position.

5. Adjusting the intermediate presser bar



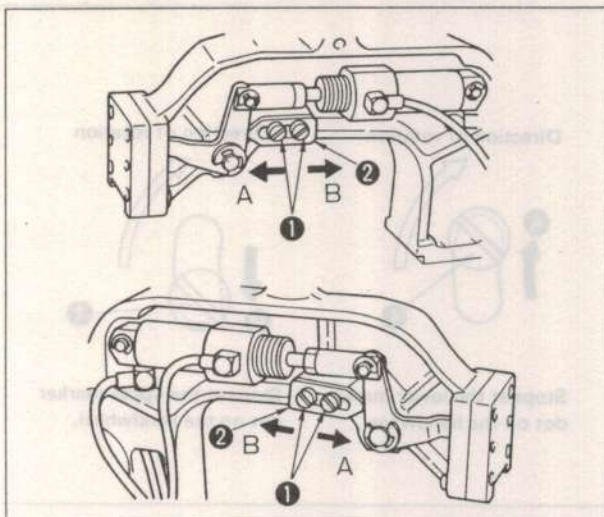
If it is impossible to adjust the height of the intermediate presser foot with aforementioned screw ② when sewing a heavy-weight material, further adjust the height of the intermediate presser foot taking the following procedure.

- 1) Loosen screw ④, and increase protruding amount A of the intermediate presser bar ⑥ from bracket ⑤.
- 2) Increase height B of the adjustment screw by the amount same as increased protruding amount A of intermediate presser bar ⑥.

* The standard adjustment of A is 0.5 to 1 mm.

The standard adjustment of B is 10 mm.

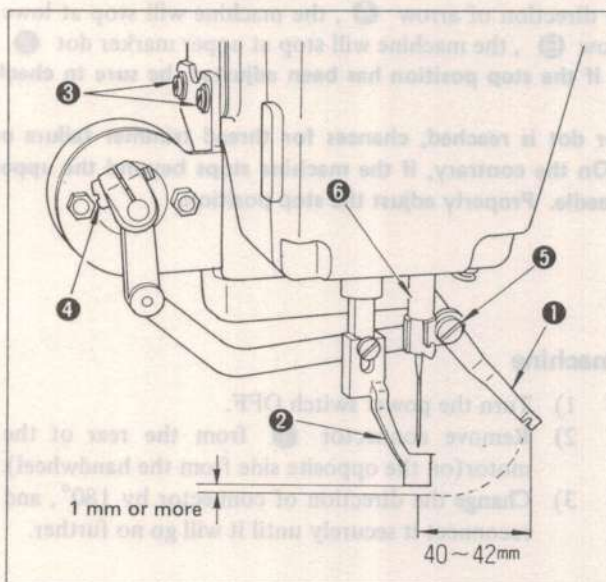
6. Adjusting the height of the feeding frame



Loosen screw ①, and adjust the height of the feeding frame by moving stopper ② in the direction of the arrow.

- Moving the stopper in direction A will reduce the height of the feeding frame.
- Moving the stopper in direction B will add to the height of the feeding frame.

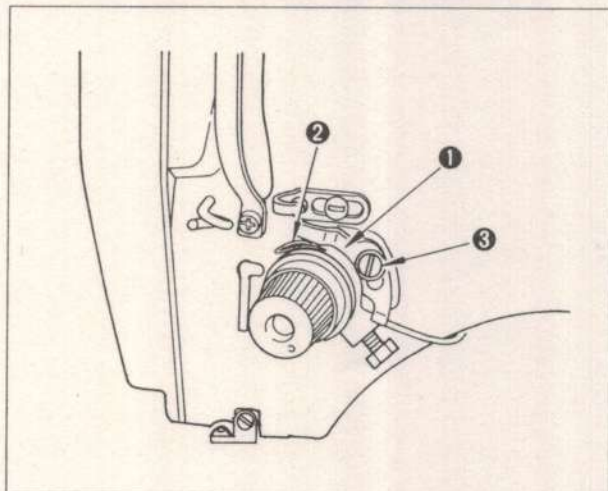
7. Adjusting the wiper



When wiper ① passes under the needle point, each of the clearance between the wiper and the needle, and between the wiper and intermediate presser ②, should be 1 mm or more. When the wiper returns to its home position, the distance between the end face of the wiper and the center of the needle should be 40 to 42 mm. Adjust the position of the wiper with adjusting screws ③ and ④.

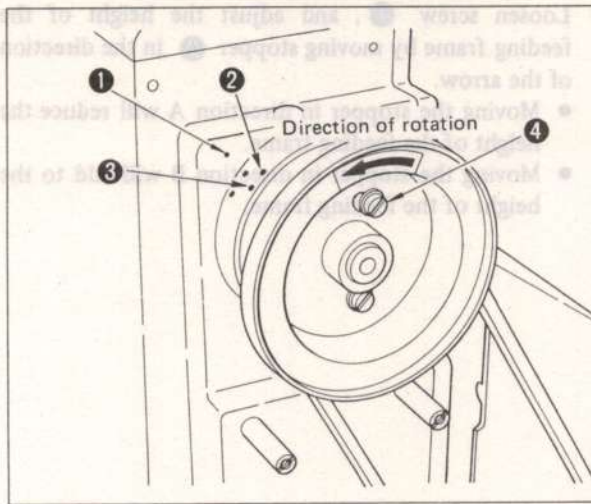
(Caution) When adjusting the position of the wiper, make sure that wiper ① passes vertically under the needle point, and that wiper hinge screw ⑤ does not come in contact with needle bar ⑥. When sewing a material whose thickness is 3 mm or less, the wiper is allowed to pass the clearance between the needle and the intermediate presser by changing the setting of the DIP switch 6-7. At this time, be sure to adjust so that a clearance of 1 mm or more is provided between the wiper and the needle and between the wiper and the intermediate presser.

8. Adjusting the thread breakage detector

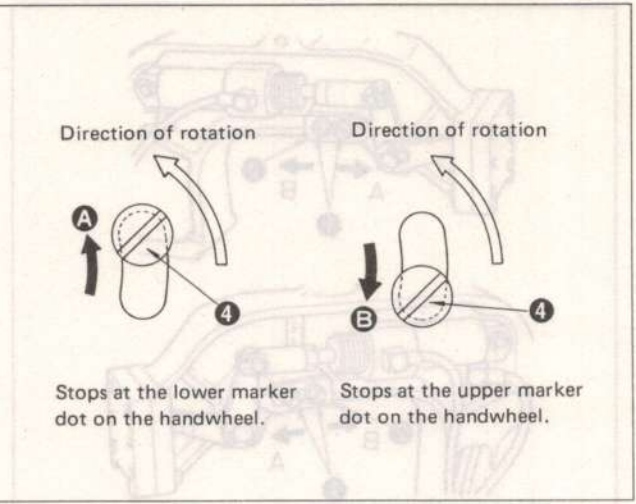


- 1) Adjust so that thread breakage detector disk ① is always in contact with thread take-up spring ② in the absence of the needle thread. (slack : approx. 0.5 mm)
- 2) Whenever the stroke of thread take-up spring ② has been changed, be sure to readjust thread breakage detector disk ①. To make this adjustment, loosen screw ③.
- 3) Adjust so that thread breakage detector disk ① does not touch any adjacent metallic parts other than thread take-up spring ②.

9. Adjusting the needle-up stop position

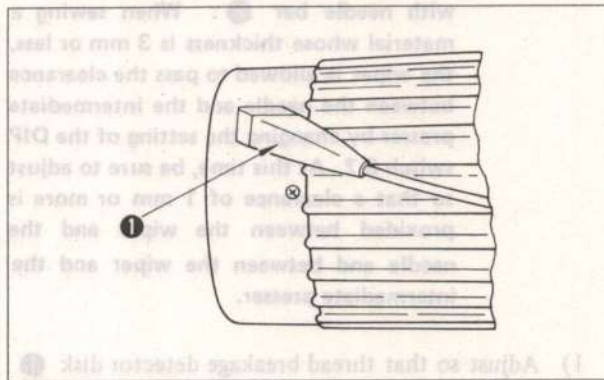


8. Adjusting the height of the feeding frame



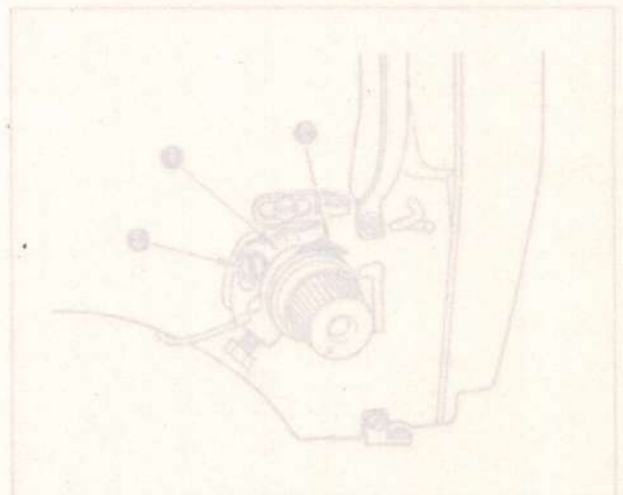
- 1) Marker dot ① on the machine arm should stop between upper blue marker dot ② and lower blue marker dot ③ on the handwheel.
 - 2) When adjusting screw ④ is loosened and moved in the direction of arrow A, the machine will stop at lower marker dot ③. When it is moved in the direction of arrow B, the machine will stop at upper marker dot ②.
- (Caution) 1. Usually, no adjustment is required. However, if the stop position has been adjusted, be sure to check the new stop position, setting a workpiece.
2. If the machine stops before the lower marker dot is reached, chances for thread trimmer failure or thread slipping off the needle may increase. On the contrary, if the machine stops beyond the upper marker dot, the wiper may interfere with the needle. Properly adjust the stop position.

10. Changing the direction of rotation of the sewing machine

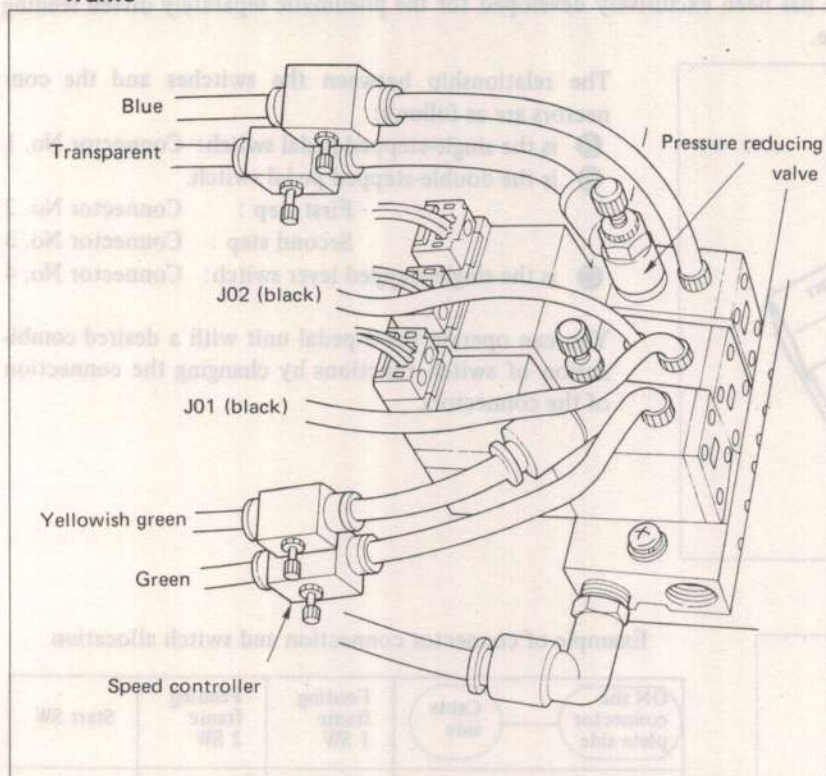


- 1) Turn the power switch OFF.
- 2) Remove connector ① from the rear of the motor (on the opposite side from the handwheel).
- 3) Change the direction of connector by 180°, and reconnect it securely until it will go no further.

8. Adjusting the thread breakage detector



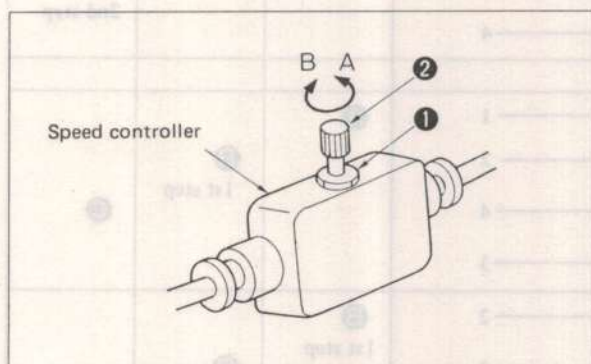
11. Adjusting the lifting/lowering speed of the feeding frame and the lowering pressure of the feeding frame



The lifting/lowering speed of the feeding frame is adjusted using the speed controller to which the colored air tubes are connected. The lowering pressure of the feeding frame is adjusting using the pressure reducing valve to which the colored air tubes are connected.

- Blue : Air tube for lifting the right frame of the feeding frame
- Transparent: Air tube for lowering the right frame of the feeding frame.
- Green : Air tube for lifting the left frame of the feeding frame
- Yellowish : Air tube for lowering the left frame of the feeding frame

* The "right" and "left" used in the aforementioned description represent the directions as observed from the sewing machine side.



1) Adjusting the lifting/lowering speed of the feeding frame

Loosen nut ① and adjust the lifting/lowering speed of the feeding frame by turning knob ②.

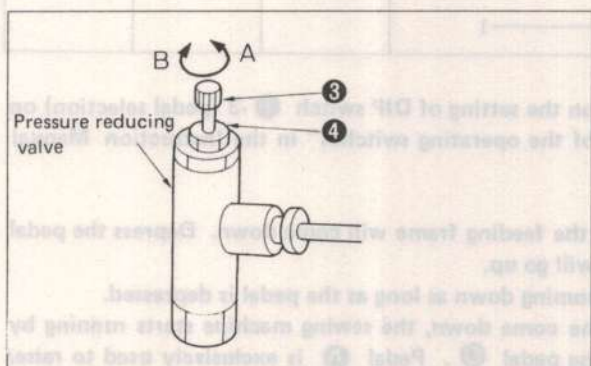
The knob is turned in direction A

The speed will be increased.

The knob is turned in direction B

The speed will be decreased.

After the adjustment, be sure to tighten nut ①.



2) Adjusting the lowering pressure of the feeding frame

Loosen nut ④, and adjust the lowering pressure of the feeding frame by turning knob ③.

The knob is turned in direction A

The pressure will be decreased.

The knob is turned in direction B

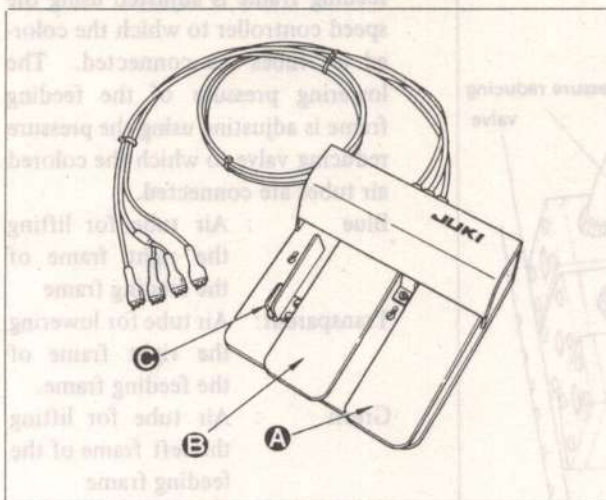
The pressure will be increased.

* The standard pressure is 2.5 kgf/cm². It has been factory-adjusted to 2.5 kgf/cm² at the time of delivery.

So it is not necessary to adjust the pressure for the normal operation of the sewing machine.

12. How to operate the PK-47 3-pedal unit

The PK-47 is the foot pedal switch which has been exclusively developed for the pneumatic separately driven feeding frame of the AMS Series of sewing machine.



The relationship between the switches and the connectors are as follows:

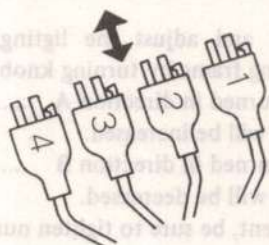
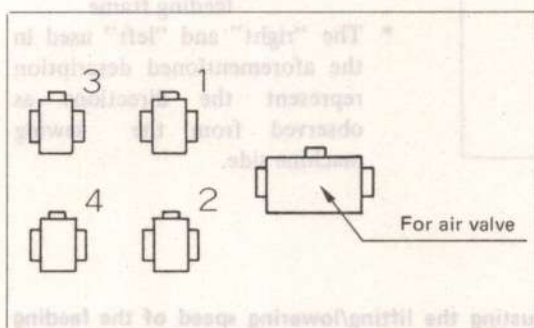
- Ⓐ is the single-stepped pedal switch: Connector No. 1
- Ⓑ is the double-stepped pedal switch.

First step : Connector No. 2

Second step : Connector No. 3

- Ⓒ is the single-stepped lever switch: Connector No. 4

You can operate the 3-pedal unit with a desired combination of switch functions by changing the connection of the connectors.



Example of connector connection and switch allocation

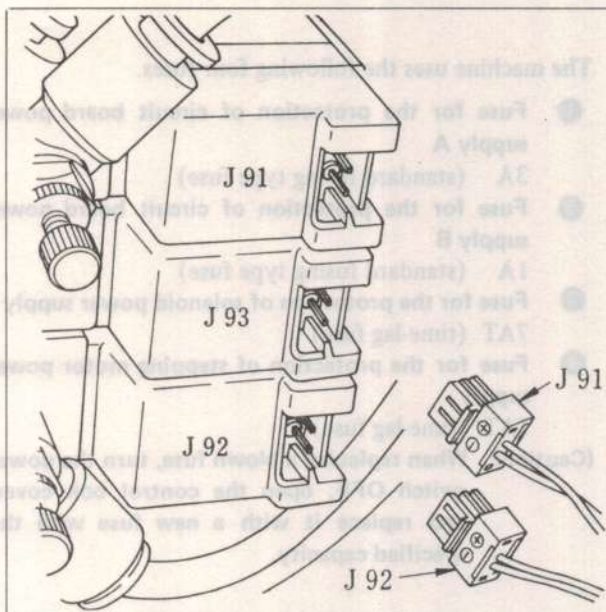
ON the connector plate side	Cable side	Feeding frame 1 SW	Feeding frame 2 SW	Start SW
1 — 1	1	Ⓐ		
2 — 2	2		Ⓑ 1st step	
3 — 3	3			Ⓑ 2nd step
4 — 4	4			
1 — 1	1	Ⓐ		
2 — 2	2		Ⓑ 1st step	
3 — 4	4			Ⓒ
4 — 3	3			
1 — 2	2	Ⓑ 1st step		
2 — 3	3		Ⓑ 2nd step	
3 — 4	4			Ⓒ
4 — 1	1			

(Caution) The PK-47 operates in the different ways depending on the setting of DIP switch ① -3 (pedal selection) on the operation circuit board. (Refer to "Function of the operating switches" in the Instruction Manual for the AMS-206.)

DIP SW ① -3 ON : Depress the pedal once, and the feeding frame will come down. Depress the pedal again, and the feeding frame will go up.

OFF : The feeding frame will keep coming down as long as the pedal is depressed.

After the right- and left-frames of the feeding frame come down, the sewing machine starts running by depressing pedal Ⓑ to its second step or depressing pedal Ⓒ. Pedal Ⓐ is exclusively used to raise/lower the feeding frame.

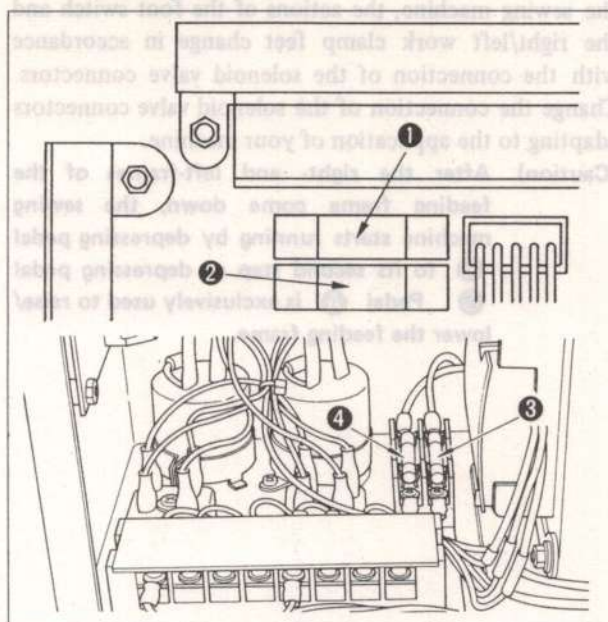


When using a AMS-206CGL and PK-47 or PK-48 with the sewing machine, the actions of the foot switch and the right/left work clamp feet change in accordance with the connection of the solenoid valve connectors. Change the connection of the solenoid valve connectors adapting to the application of your machine.

(Caution) After the right- and left-frames of the feeding frame come down, the sewing machine starts running by depressing pedal **B** to its second step or depressing pedal **C**. Pedal **A** is exclusively used to raise/lower the feeding frame.

Method of connecting the connectors	PK-47	PK-48
J 91 – J 91	Left pedal – Left work clamp foot goes up/comes down. Right pedal – Right work clamp foot goes up/comes down.	1st step – Left work clamp foot goes up/comes down. 2nd step – Right work clamp foot goes up/comes down.
J 92 – J 92	1st step	
J 91 – J 92	Left pedal – Right work clamp foot goes up/comes down. Right pedal – Left work clamp foot goes up/comes down.	1st step – Right work clamp foot goes up/comes down. 2nd step – Left work clamp foot goes up/comes down.
J 92 – J 91	1st step	

13. Replacing the fuse



The machine uses the following four fuses.

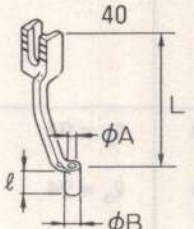
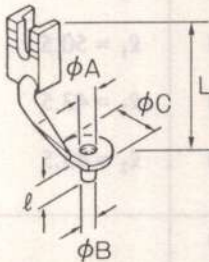
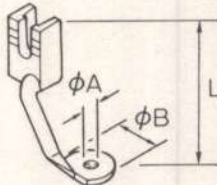
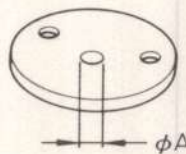
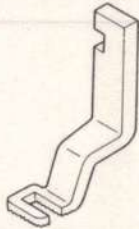
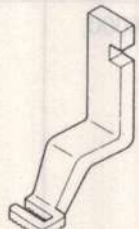
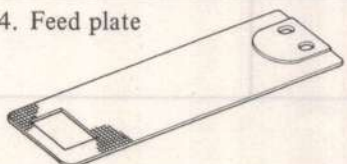
- ① Fuse for the protection of circuit board power supply A
3A (standard fusing type fuse)
- ② Fuse for the protection of circuit board power supply B
1A (standard fusing type fuse)
- ③ Fuse for the protection of solenoid power supply
7AT (time-lag fuse)
- ④ Fuse for the protection of stepping motor power supply
7AT (time-lag fuse)

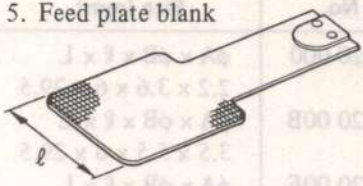
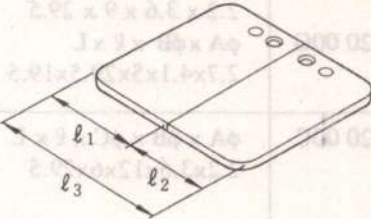
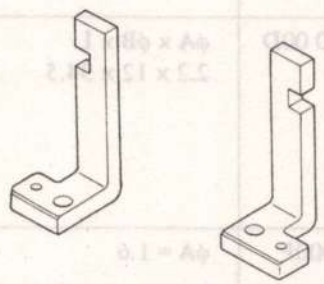
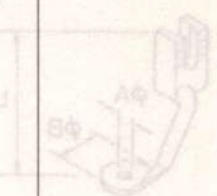
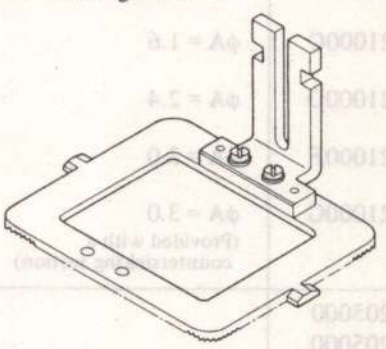

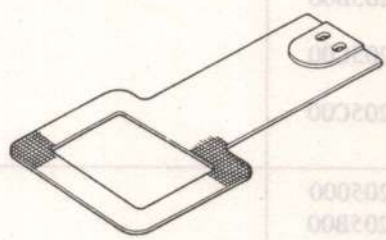
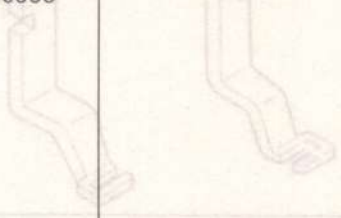
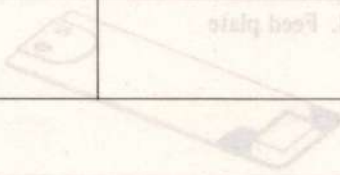
(Caution) When replacing a blown fuse, turn the power switch OFF, open the control box cover, and replace it with a new fuse with the specified capacity.

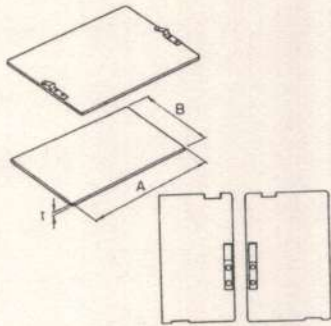
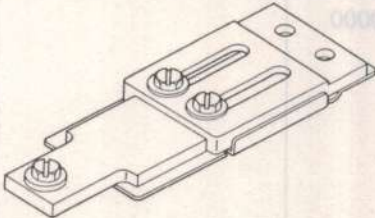

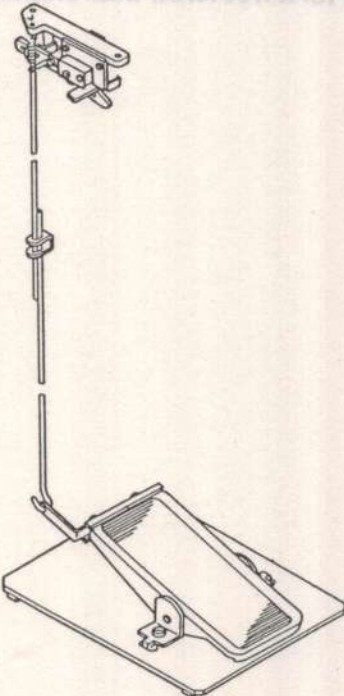
★ Service patterns diagram

No.	Service patterns		
	Name	Sewing size when scale is set at 100%	Stitches sewn
01	42-stitches large bartacking	(width) (length) 16 x 2	
02	36-stitches large bartacking	16 x 2	
03	26-stitches large bartacking	16 x 2	
04	56-stitches large bartacking	16 x 2	
05	36-stitches small bartacking	8 x 2	
06	28-stitches small bartacking	8 x 2	
07	21-stitches small bartacking	8 x 2	
08	28-stitches lenear bartacking	14 x 0	
09	21-stitches lenear bartacking	14 x 0	
10	36-stitches lenear bartacking	16 x 0	
11	28-stitches bartacking for knitted fabric	8 x 2	
12	21-stitches bartacking for knitted fabric	8 x 2	

V. OPTION

Name of part	Type	Part No.	Size (mm)
1. Intermediate presser   	Intermediate presser (A)	B1601 220 000	$\phi A \times \phi B \times l \times L$ 2.2 x 3.6 x 6 x 29.5
	Intermediate presser (B)	B1601 220 00B	$\phi A \times \phi B \times l \times L$ 3.5 x 5.5 x 6 x 29.5
	Intermediate presser (E)	B1601 220 00E	$\phi A \times \phi B \times l \times L$ 1.6 x 2.6 x 6 x 29.5
	Intermediate presser (F)	B1601 220 00F	$\phi A \times \phi B \times l \times L$ 2.2 x 3.6 x 9 x 29.5
	Intermediate presser (G)	B1601 220 00G	$\phi A \times \phi B \times l \times L$ 2.7x4.1x5x29.5x19.5
	Intermediate presser (C)	B1610 220 00C	$\phi A \times \phi B \times \phi C \times l \times L$ 2.2x3.6x12x6x29.5
	Intermediate presser (D)	B1601 220 00D	$\phi A \times \phi B \times L$ 2.2 x 12 x 34.5
2. Needle hole guide 	Needle hole guide (A) for light-weight materials	B242621000F	$\phi A = 1.6$
	Needle hole guide (B) for medium-weight materials	B242621000B	$\phi A = 2.0$
	Needle hole guide (C) for knitted materials	B242621000C	$\phi A = 1.6$
	Needle hole guide (D) for heavy-weight materials	B242621000D	$\phi A = 2.4$
	Needle hole guide (F) for heavy-weight materials	B242621000F	$\phi A = 3.0$
	Needle hole guide (G) for heavy-weight materials	B242621000G	$\phi A = 3.0$ (Provided with a countersinking section)
3. Work clamp foot  	Work clamp foot (right)	B2551205000	
	Work clamp foot (left)	B2552205000	
	Work clamp foot (right) for small bartacking	B2551205B00	
	Work clamp foot (left) for small bartacking	B2552205B00	
	Work clamp foot (right) for knitted-materials	B2551205C00	
	Work clamp foot (left) for knitted materials	B2552205C00	
4. Feed plate 	Feed plate	B2556205000	
	Feed plate for small bartacking	B2556205B00	
	Feed plate for bartacking of knitted material	B2556205C00	

Name of part	Type	Part No.	Size (mm)
5. Feed plate blank 	Feed plate blank without knurl	B25562060X0	$l = 104$
	Feed plate blank with knurl	B25562060Y0	$l = 104$
6. Feeding frame blank 	Feeding frame assembly blank without knurl	B25532060X0	$l_3 = 94$
	Feeding frame assembly blank with knurl	B25532060Y0	$l_3 = 94$
	Feeding frame blank (right) without knurl	B25722060X0	$l_1 = 50.5$
	Feeding frame blank (right) with knurl	B25722060Y0	$l_1 = 50.5$
	Feeding frame blank (left) without knurl	B25732060X0	$l_2 = 43.5$
	Feeding frame blank (left) with knurl	B25732060Y0	$l_2 = 43.5$
7. Slide plate 	Right slide plate	B25702060A0	
	Left slide plate	B25712060A0	
8. Feeding frame 	Slide plate assembly	B25512060A0	
9. Feed plate 	Feed plate	B2556206000	
			

Name of part	Type	Part No.	Size (mm)
10. Plastic blank 	Feeding frame material (A)	B2587210000	A × B × t 210 × 150 × 1
	Feeding frame material (B)	B2588210000	A × B × t 210 × 150 × 1.5
	Large plastic feeding frame (asm.)	B25572060A0	
	Plastic blank (left) (asm.) Plastic blank (right) (asm.)	B25572060AA B25572060AB	
11. Auxiliary feed plate (asm.) 	Auxiliary feed plate (asm.)	B25642100A0	Used with LK subclass feed plate 
12. 3-step pedal unit 	3-step pedal (asm.)	GPK480010A0	

Name of part	Part No.	Type	Part No.	Size (mm)
13. Compressor unit	B228210000	(A)	CU01	
	B2288210000	(B)		
	B22272060A0	Large plastic feeding frame (asm.)		
	B22272060AA	Plastic plank (left) (asm.)		
	B22272060AB	Plastic plank (right) (asm.)		
	B22642100A0	Auxiliary feed plate (asm.)		
14. Thread guide		Needle bar thread guide It effectively prevents stitch skipping and slip-off the thread from needle eyelet at the start of sewing.	B1405210000	

(Caution) Specify either the 3-step pedal unit (GPK480010AA) or the 3-pedal unit (GPK470010AA) when ordering a main unit of the sewing machine.

VI. TROUBLES AND CORRECTIVE MEASURES

Trouble	Cause	Corrective measures	Page
1. Thread slips off the needle at sewing start	① Stitches are skipped at sewing start.	○ Adjust the clearance between the needle and the shuttle to 0.05 to 0.1 mm.	31
	② The thread remaining on the needle after thread trimming is too short.	○ Decrease the tension given by thread tension controller No. 1.	12
		○ Increase the tension of the thread take-up spring.	14
		○ Use standard needle bar thread guide (B1405210000).	42
	③ The bobbin thread is too short.	○ Shorten the stitch length at the sewing start.	
		○ Decrease the bobbin thread tension.	12
		○ Increase the clearance between the needle hole guide and the counter knife.	32
	④ The feed timing is bad.	○ Properly adjust the feed timing.	21
2. Thread often breaks or synthetic thread splits finely.	① The shuttle or the shuttle driver has scratches.	○ Remove the shuttle or the shuttle driver, and remove the scratches, using a whetstone or buff.	
	② The needle hole guide has scratches.	○ Buff or replace the needle hole guide.	
	③ The needle hits the intermediate presser.	○ Adjust the position of the intermediate presser.	
	④ Fibrous wastes are in the groove of the shuttle race.	○ Remove the shuttle, and remove the fibrous wastes.	31
	⑤ The needle thread tension is too high.	○ Decrease the needle thread tension.	12
	⑥ The thread take-up spring tension is too high.	○ Decrease the thread take-up spring tension.	14
	⑦ The synthetic thread melts due to	○ Use silicone oil.	11
3. Needle often breaks.	① The needle is bent.	○ Use a needle with lower count.	10
		○ Decrease the sewing speed.	14
	② The needle hits the intermediate presser.	○ Replace the needle.	
	③ The feed timing is bad.	○ Adjust the position of the intermediate presser properly.	21
	④ The needle is too thin for the material.	○ Adjust the timing to feed the material properly.	10
4. Thread trimmer fails to trim thread.	⑤ The needle bends in contact with the shuttle driver.	○ Use a needle of the size suited to the material.	31
	① The counter knife is dull.	○ Correct the needle-to-shuttle relationship in position.	
	② The clearance between the needle hole guide and the counter knife is too small.	○ Replace the counter knife.	32
	③ The moving knife has been improperly positioned.	○ Correct the clearance	32
	④ The last stitch has been skipped.	○ Correct the position of the moving knife.	32
	⑤ The bobbin thread cannot be trimmed.	○ Correct the timing between the needle and the shuttle.	31
		○ Change the pattern so that thread trimming is performed in the direction of the perfect stitching.	
		○ Lengthen the stitch length just before thread trimming.	

Trouble	Cause	Corrective measures	Page
5. Stitches are frequently skipped.	① The timing between the needle and the shuttle is bad.	○ Correctly position the shuttle with respect to the needle.	31
	② The clearance between the needle and the shuttle is too large.	○ Correctly position the shuttle with respect to the needle.	31
	③ The needle is bent.	○ Replace the needle.	10
	④ The feed timing is not correct.	○ Correct the feed timing.	21
	⑤ The needle bends in contact with the shuttle driver.	○ Correct the position of the shuttle driver.	31
	⑥ The height of the intermediate presser is incorrect.	○ Correct the height of the intermediate presser.	32
6. Loose stitches	① The needle thread tension is not high enough.	○ Increase the needle thread tension.	12
	② Thread tension disks No. 2 are released.	○ Properly install the thread tension disks No. 2,	21
	③ The feed timing is bad.	○ Correct the feed timing.	12
	④ Isolated idling loops are formed on the wrong side of the material due to untwisted needle thread.	○ Increase the needle thread tension.	11
7. Thread breaks at the time of thread trimming.	① The moving knife has been improperly positioned.	○ Correct the position of the moving knife.	32
8. The sewing product slips out of the predetermined position on the machine during sewing.	① The sewing product is not securely clamped.	○ Attach a non-slip material such as a piece of emery paper on the reverse side of the feeding frame. ○ Machine an exclusive feeding frame made of metal.	
9. The needle thread loosens.	① The needle thread is insufficient.	○ Increase the needle thread tension.	12
	② Single yarn of the needle thread loosens due to untwisted needle thread.	○ Increase the needle thread tension.	12
		○ Replace the needle with a thicker needle.	10
		○ Apply silicon oil.	11

JUKI

JUKI CORPORATION

HEAD OFFICE

8-2-1 KOKURYO-CHO,
CHOFU-CITY, TOKYO 182, JAPAN

BUSINESS OFFICE

1-23-3 KABUKI-CHO
SHINJUKU-KU, TOKYO 160, JAPAN

PHONE : 03(3205)1188, 1189, 1190

FAX : 03(3203)8260, (3205)9131

TELEX : J22967, 232-2301

To order or for further information, please contact :

Please do not hesitate to contact our distributors or agents in your area for further informations when necessary.

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

* This instruction manual is edited and printed in accordance with the product specifications as of November, 1991.