

ENGLISH

**AMS-224EN6060 / IP-420
INSTRUCTION MANUAL**

- * This Instruction Manual only describes the functions which are different from those of the AMS-224EN/IP-420. In order to use the AMS-224EN6060 safely, please be sure to read not only this Instruction Manual but also that for the AMS-224EN/IP-420 before using your AMS-224EN6060.
- * "CompactFlash(TM)" is the registered trademark of SanDisk Corporation, U.S.A.

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* : Refer to the Instruction Manual for the AMS-224EN.

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* : Refer to the Instruction Manual for the AMS-224EN.

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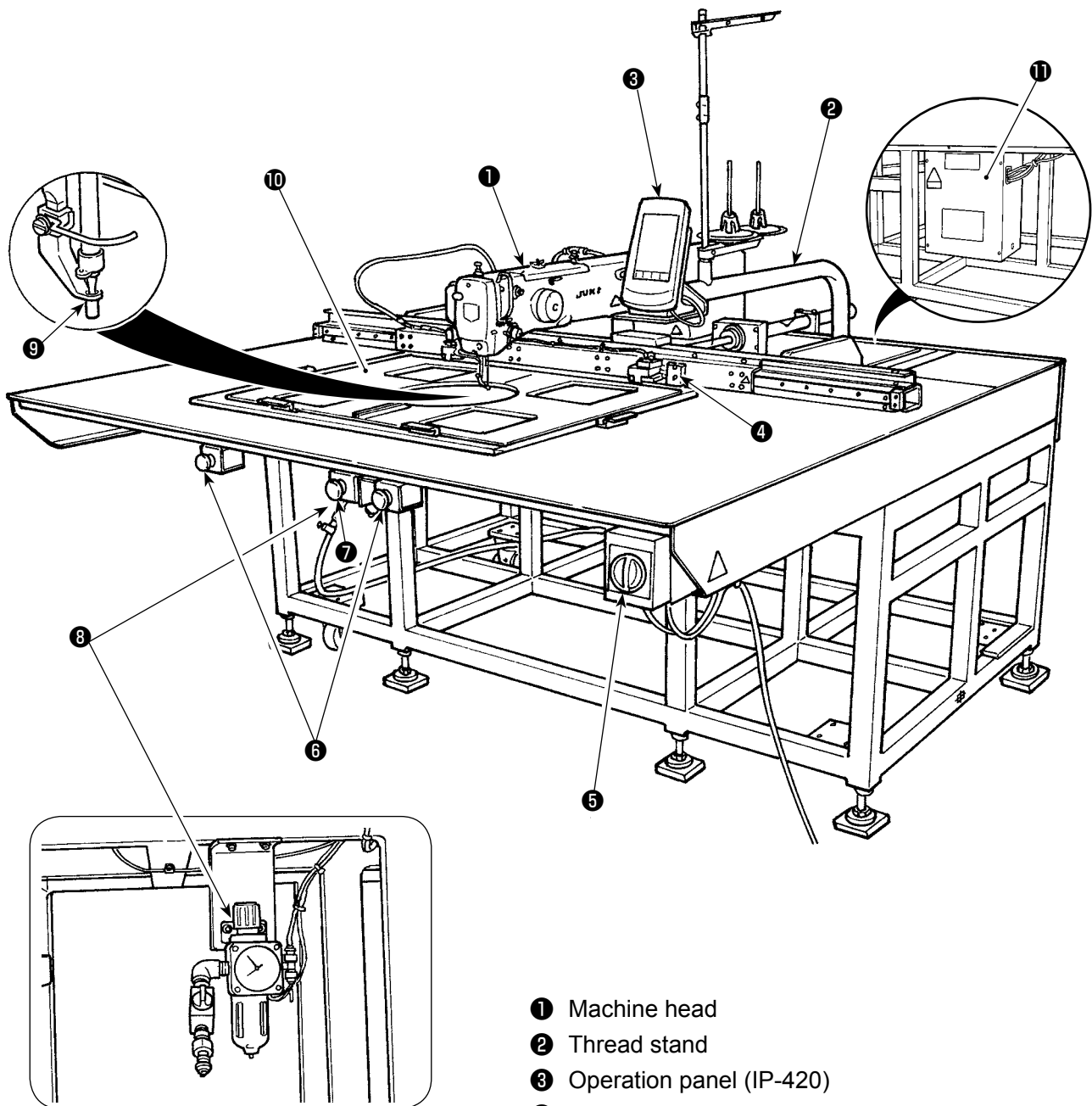
* : Refer to the Instruction Manual for the AMS-224EN.

I. MECHANICAL SECTION (WITH REGARD TO THE SEWING MACHINE)

1. SPECIFICATIONS

1	Sewing area	Standard sewing area at the time of shipment X direction 600 mm × Y direction 500 mm Largest possible sewing area X direction 600 mm × Y direction Max. 600 mm
2	Max. sewing speed	2,000 sti/min (When sewing pitch is 3 mm or less)
3	Stitch length	0.1 to 12.7 mm (in increments of 0.05 mm)
4	Feed system	Intermittent X-Y linear system (with an encoder) driven by the stepping motor
5	Needle bar stroke	41.2 mm
6	Needle Sewing specification	DP x 17 (B point) (Standard #24) (135×17 FG) Pneumatic reverse feed type Applicable count of thread: 840 to 1860 denier
7	Feeding frame specification	Cassette holder of auto-ejector type
8	Intermediate presser stroke	4 mm (Standard) (0 to 10 mm)
9	Lift of intermediate presser	15 mm
10	Intermediate presser DOWN position variable	0 to 4.0 mm
11	Shuttle	Double-capacity semi-rotary hook
12	Lubricating oil	New Defrix Oil No. 2 (Lubrication system) Grease: JUKI GreaseA, PenetrationNo2 lithium Grease, JUKI GreaseB, LONGTERM W2 (feed rack & pinion, auto-ejector)
13	Memory of pattern data	Main body, medium • Main body : Max. 999 patterns (Max. 50,000 stitches/pattern) • Medium : Max. 999 patterns (Max. 50,000 stitches/pattern)
14	Start switch	Two-hand control start switch
15	Temporary stop facility	Used to stop machine operation during a stitching cycle.
16	Enlarging / Reducing facility	Allows a pattern to be enlarged or reduced on the X axis and Y axis independently when sewing a pattern. Scale : 1% to 400% times (0.1% steps)
17	Enlarging / Reducing method	Pattern enlargement / reduction can be done by increasing / decreasing either stitch length or the number of stitches. (Increasing/decreasing stitch length only can be performed when pattern button is selected.)
18	Max. sewing speed limitation	200 to 2,000 sti/min (Scale : 100 sti/min steps)
19	Pattern selection facility	Pattern No. selection method (Main body : 1 ~ 999, Medium : 1 ~ 999)
20	Bobbin thread counter	UP/DOWN method (0 to 9,999)
21	Sewing counter	UP/DOWN method (0 to 9,999)
22	Memory back-up	In case of a power interruption, the pattern being used will automatically be stored in memory.
23	2nd origin setting facility	Using jog keys, a 2nd origin (needle position after a sewing cycle) can be set in the desired position within the sewing area. The set 2nd origin is also stored in memory.
24	Sewing machine motor	Servo-motor
25	Dimensions	1,800mm (W) x 2,100mm (L) x 1,275mm (H) (Excluding thread stand)
26	Mass (gross mass)	710 kg
27	Power consumption	550 VA
28	Operating temperature range	5°C to 35°C
29	Operating humidity range	35 % to 85 % (No dew condensation)
30	Line voltage	Rated voltage ±10% 50 / 60 Hz
31	Air pressure used	0.5 to 0.55 MPa (Max. 0.55 MPa)
32	Air consumption	1.8 dm ³ / min (ANR)
33	Needle highest position stop facility	After the completion of sewing, the needle can be brought up to its highest position.
34	Noise	- Equivalent continuous emission sound pressure level (L _{pA}) at the workstation : A-weighted value of 85 dB ; (Includes K _{pA} = 2.5 dB) ; according to ISO 10821- C.6.3 -ISO 11204 GR2 at 2,000 sti/min. - Sound power level (L _{WA}) : A-weighted value of 94 dB ; (Includes K _{WA} = 2.5 dB) ; according to ISO 10821- C.6.3 -ISO 3744 GR2 at 2,000 sti/min. (Dust prevention mat (accessory) is used.)

2. CONFIGURATION



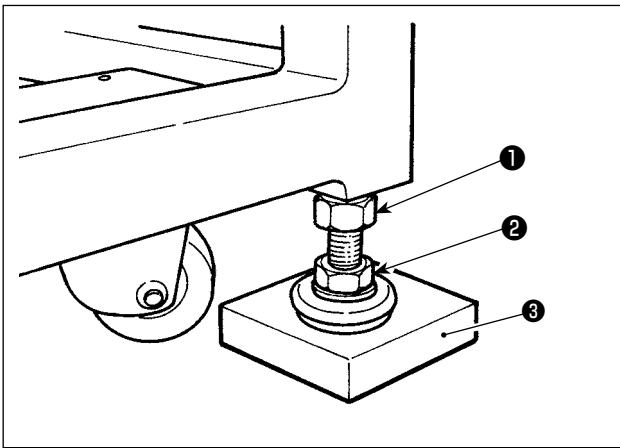
- ① Machine head
- ② Thread stand
- ③ Operation panel (IP-420)
- ④ Auto-ejector
- ⑤ Power switch (also used as the emergency stop switch)
- ⑥ Two-hand control start switch
- ⑦ Auto-ejector unclamp switch
- ⑧ Air regulator
- ⑨ Intermediate presser
- ⑩ Sewing cassette
- ⑪ Control box

3. INSTALLATION

3-1. Installation of the sewing machine



1. Installation of the machine should be carried by a trained technician.
2. Contact the distributor or a professional electrician to have him/her to carry out electric wiring.
3. The sewing machine weighs 710 kg or more. It is therefore necessary to install it with two or more persons.
4. Do not connect the power plug until the installation of the sewing machine is completed. If you press the start switch by mistake, the sewing machine will run to cause an accident resulting in an injury.
5. Install the sewing machine away from strong electrical noise sources such as a high-frequency welder. Installing the sewing machine near the strong electrical noise source can cause a malfunction of the machine.
6. Be sure to ground the sewing machine. If the earth connection is improper, an electrical shock can occur.



- 1) Once the place of installation of the sewing machine is determined, place vibration preventing rubber (40123512) ③ under adjusting bolt ②. (The vibration preventing rubber is supplied with the machine in the accessory box.)
- 2) Loosen locknuts ① of adjusting bolts ② at eight locations. Lower adjusting bolts ② to check to be sure that the machine is horizontal to the floor. Then, secure the machine with locknuts ①.



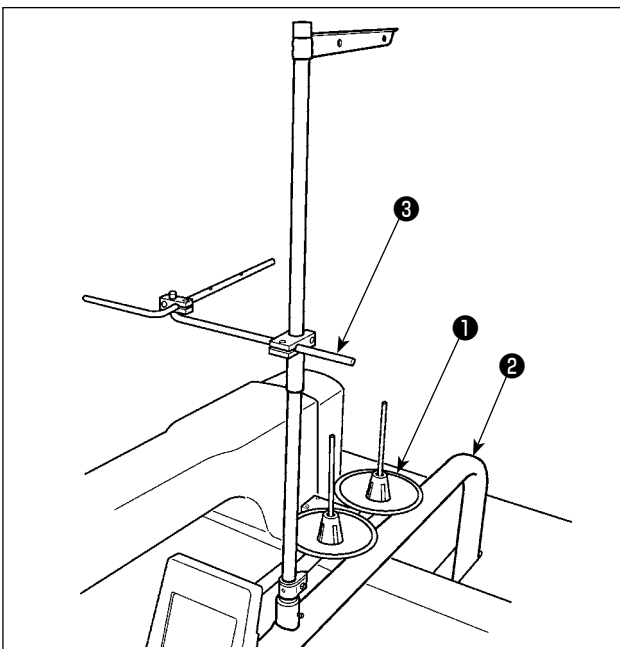
If the machine is not properly secured, the main body of the sewing machine can move from the installation location to cause an injury of the worker and a malfunction of the sewing machine.

3-2. Assembling the thread stand

Refer to "I-3-4. Installing the thread stand" p.6 in the Instruction Manual for the AMS-224EN.

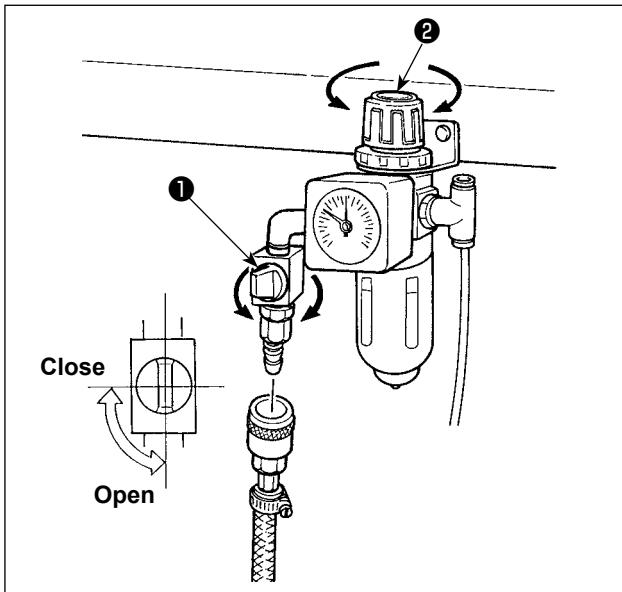
(The thread stand components are supplied with the machine in the accessory box.)

3-3. Installing the thread stand



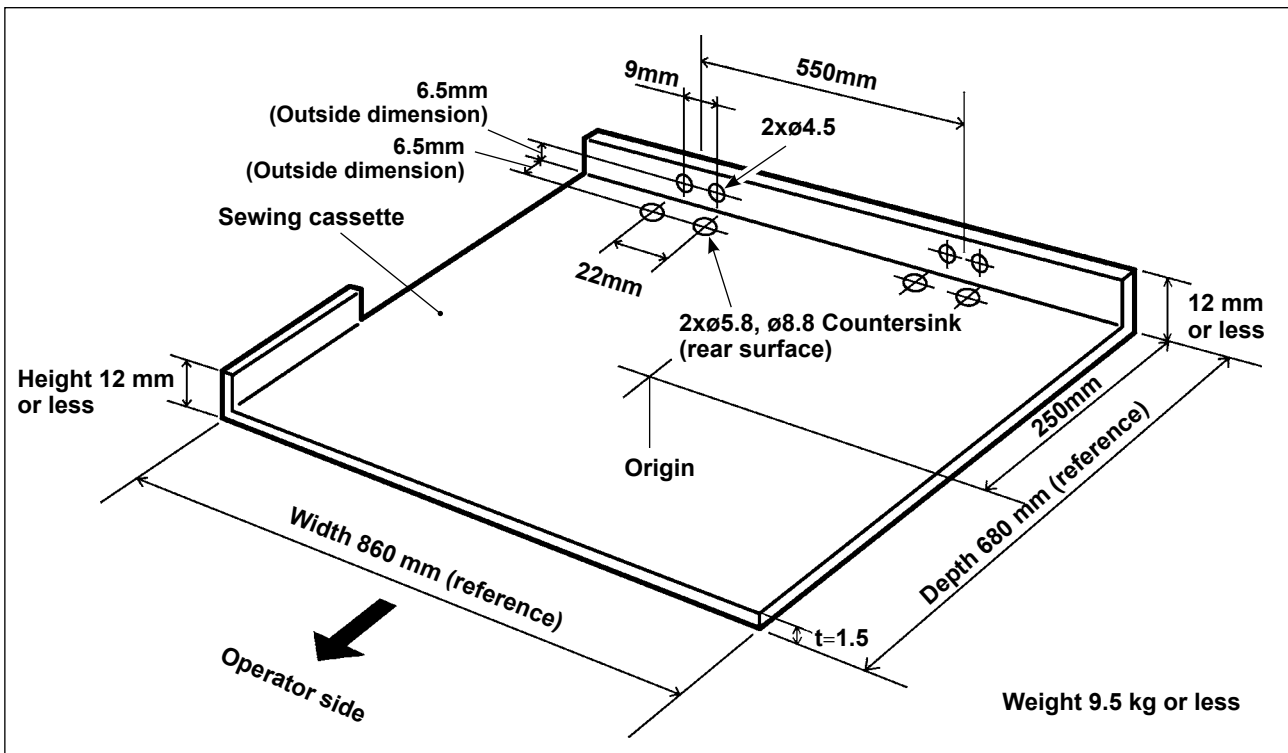
Install thread base ① on the panel strut ②. Install intermediate thread guide asm. (26910059) ③ with oriented in the direction as shown in the drawing.

3-4. Installing the air hose



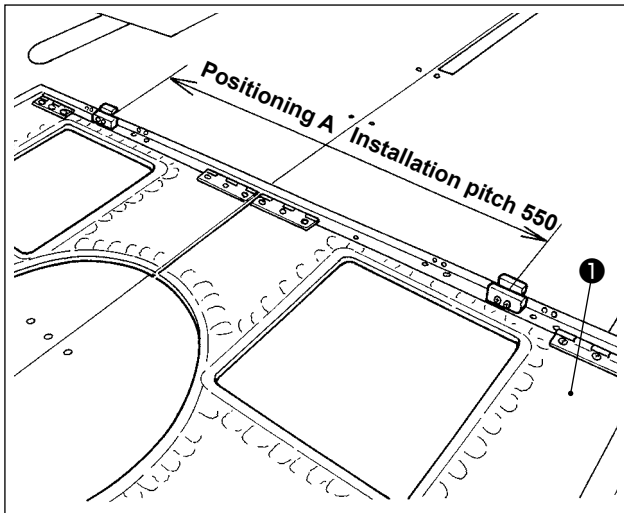
- 1) Connecting the air hose
Connect the air hose to the regulator.
 - 2) Adjustment of air pressure
Open air cock ❶, pull up and turn air adjustment knob ❷ and adjust so that air pressure indicates 0.5 to 0.55 MPa (Max. 0.55 MPa).
Then lower the knob and fix it.
- * Close air cock ❶ to expel air.

3-5. Preparing the sewing cassette



- 1) The sewing cassette is separately available by special order.
When you would like to prepare a sewing cassette by yourself, prepare the sewing cassette shown in the figure above.

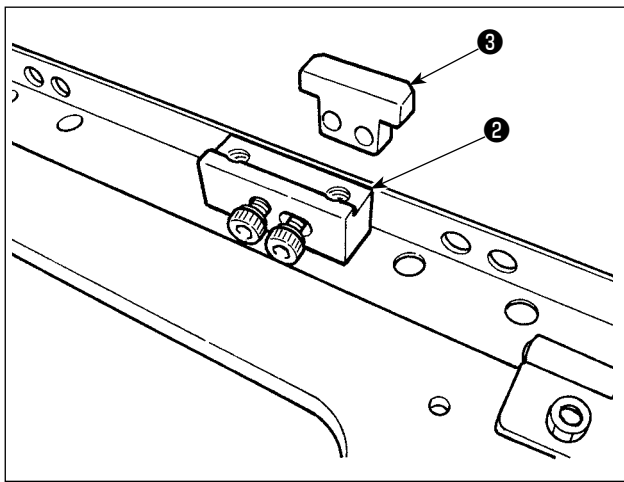
* When you have prepared a custom-ordered sewing cassette, read from 2).



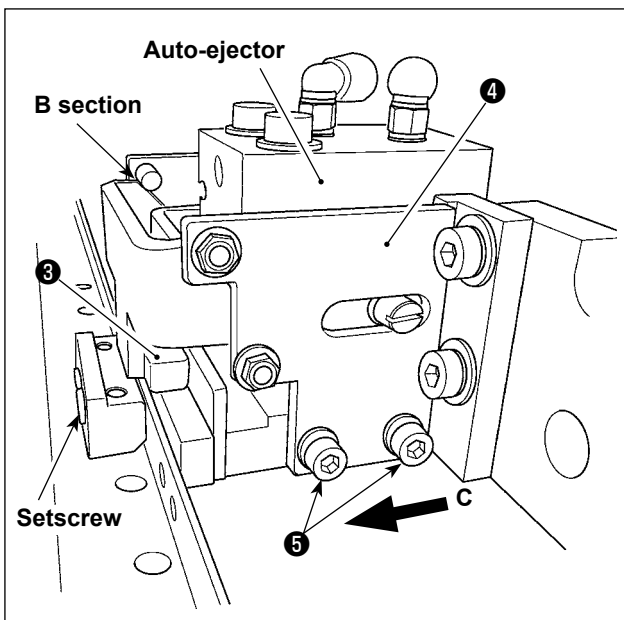
- 2) Adhere Teflon sheet (optional: 40123146) on the rear surface of sewing cassette ①.



If the Teflon sheet is not adhered on the rear surface of the sewing cassette, the top surface of the throat plate can be stained to leave stains on the sewing material. The Teflon sheet is a consumable part. It is necessary therefore periodically inspect it and change it with a new one if it has worn out.



- 3) Temporarily fix positioning block (40123408) ② and positioning block (40123409) ③ at both ends of the sewing cassette pitch (550 mm). (Positioning blocks ② and ③ and the setscrews are supplied with the machine in the accessory box.)
- 4) Fix positioning block ② with a counter-sunk head screw.

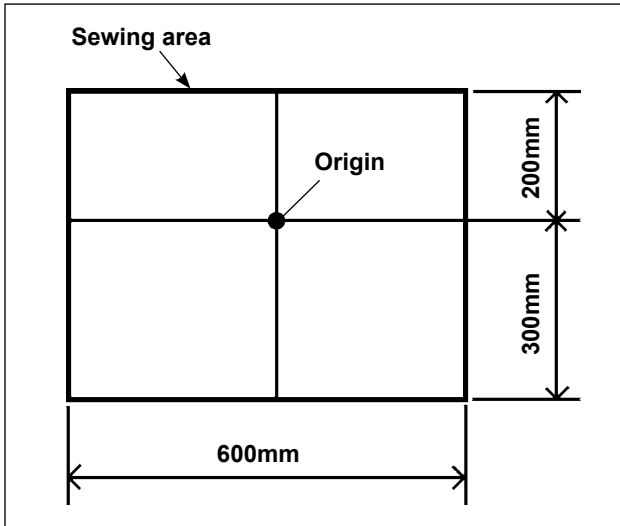


- 5) Temporarily fix positioning block ③ with the setscrews and washer. Make the auto-ejector clamp the positioning block. Then, fix positioning block ③ with the setscrew. Repeat unclamping and clamping operations several times to check whether the positioning block is fully clamped. Check the clearance in B section with the positioning block ③ clamped. If there is a clearance, loosen setscrew ⑤ and move plates ④ (at two locations on the right and left) in the direction of arrow C to adjust the clearance to 0 (zero). Move the sewing cassette back and forth and to the right and left to check whether it has a play when it is clamped.

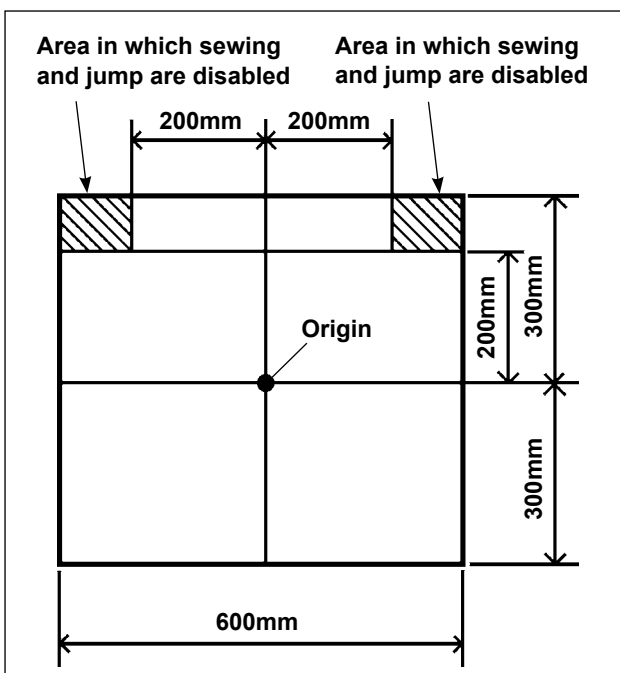


- The positioning block at the auto-ejector side is used as the reference. Do not adjust it according to the jig.
- In prior to the start of use of the sewing machine, clean up the underside and material holding plane of the sewing cassette, top surface of the throat plate auxiliary cover and sections 1 and 2 of the positioning block and check to make sure that they are free from dust. If any of them is not clean, the material can be soiled.

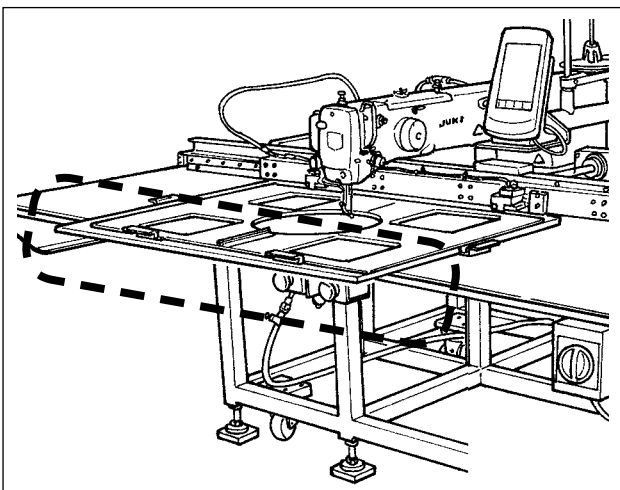
Sewing area



The sewing area has been factory set to the area (600 x 500) as shown in the figure at the time of shipment.



The sewing area can be broadened to 600 mm in longitudinal direction according to the memory switch setting. It should be remembered, however, there arises the area in which sewing and jump are disabled. So, carefully set the sewing area.



When using the machine with the sewing area of which longitudinal dimension is 600 mm, be aware that the sewing cassette may project the throat plate auxiliary cover while the feed travels forward in Y direction.

3-6. Installing the eye protection cover

Refer to "I-3-6. Installing the eye protection cover" p.7 in the Instruction Manual for the AMS-224EN.

4. PREPARATION OF THE SEWING MACHINE

4-1. Lubrication



WARNING :

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



CAUTION :

When handling the lubricating oil or grease, wear safety goggles and protective gloves to prevent the lubricating oil or grease from coming in contact with the skin. The lubricating oil and grease can cause inflammation on skin if contacted. In addition, never swallow or eat the lubrication oil and grease. The lubricating oil and grease can cause diarrhea or vomiting.

Refer to "[I-4-1. Lubrication](#)" p.9 in the Instruction Manual for the AMS-224EN for the additional information.

4-2. Attaching the needle

Refer to "[I-4-2. Attaching the needle](#)" p.9 in the Instruction Manual for the AMS-224EN.

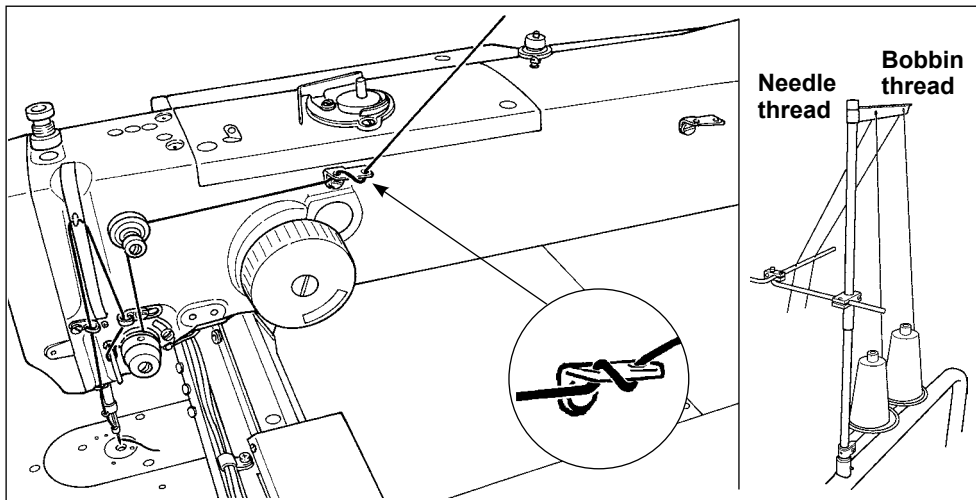
4-3. Threading the machine head



WARNING :

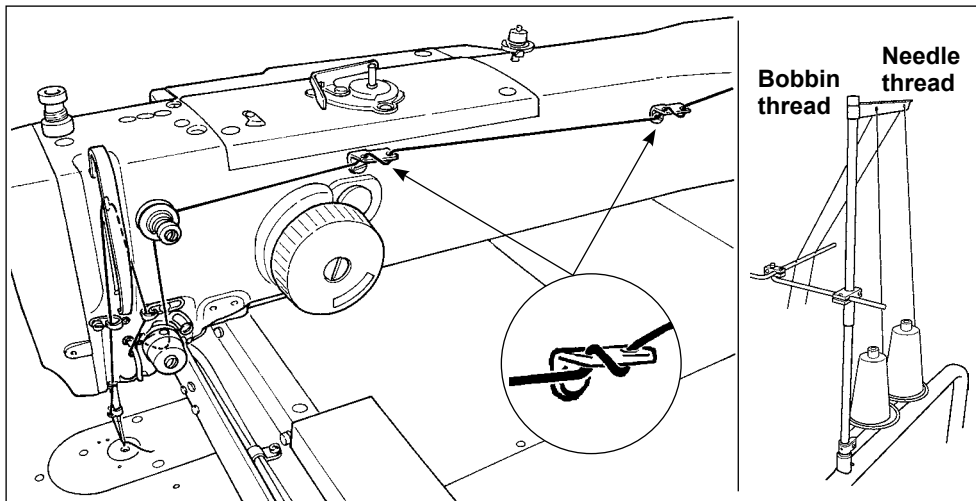
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.

Threading the thread guide



Thread the thread guide as shown in the figure at the left also when the thread resistance is large and the required length of needle thread remaining on the needle after thread trimming cannot be secured.

Threading the thread guide when using the thread that untwists hardly



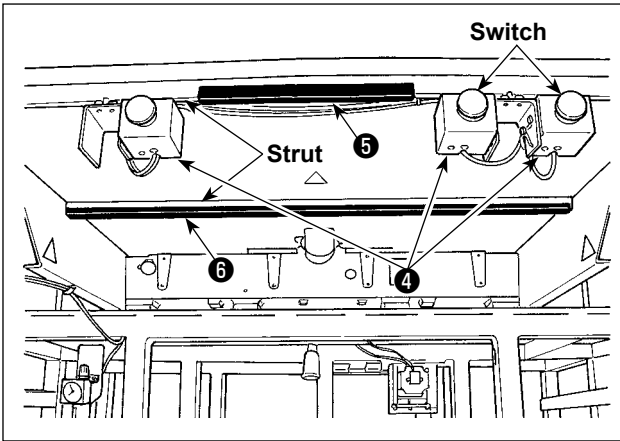
4-4. Installing and removing the bobbin case

Refer to "I-4-4. Installing and removing the bobbin case" p.10 in the Instruction Manual for the AMS-224EN.



WARNING :

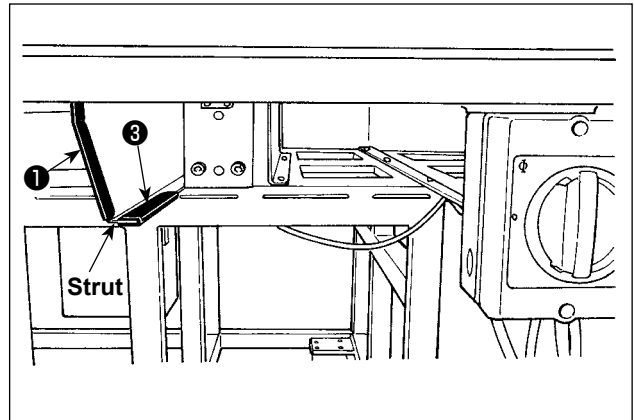
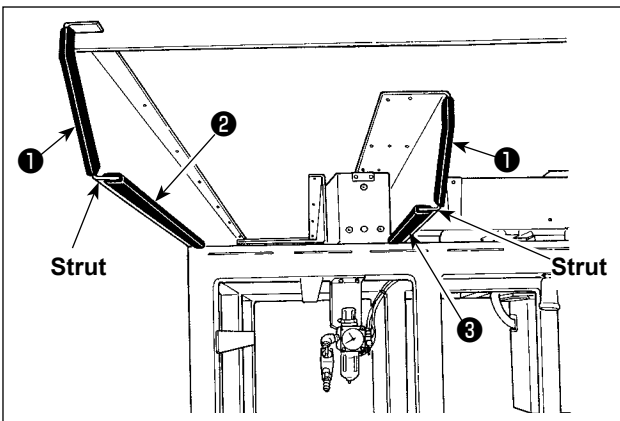
Turn OFF the power before starting the work so as to prevent accidents caused by abrupt start of the sewing machine.



Carefully protect against personal injury caused by a possible contact with the sewing machine strut, switch, etc.

Cushioning materials ① to ⑥ are adhered on the sewing machine strut, switch, etc. in order to avoid personal injury.

Inspect the cushioning materials before the operation of the sewing machine for peeling and any other defects. Change the cushioning material with a new one if it has peeled off or has any defect.



No	Part No.	Part name
①	40123402	CUSHION 1
②	40123403	CUSHION 2
③	40123404	CUSHION 3
④	40123401	CUSHION Block
⑤	40123405	CUSHION 4
⑥	40123406	CUSHION 5

4-5. Installing the bobbin

Refer to "I-4-5. Installing the bobbin" p.10 in the Instruction Manual for the AMS-224EN.

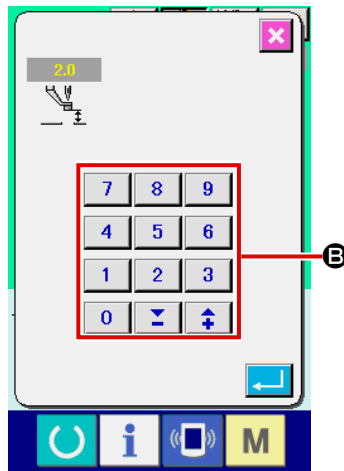
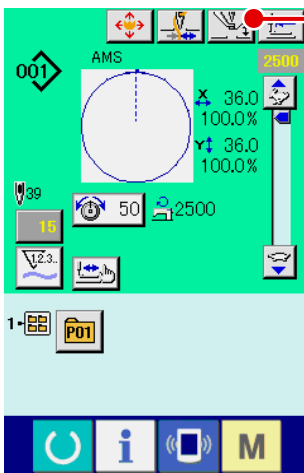
4-6. Adjusting the thread tension

Refer to "I-4-6. Adjusting the thread tension" p.11 in the Instruction Manual for the AMS-224EN.

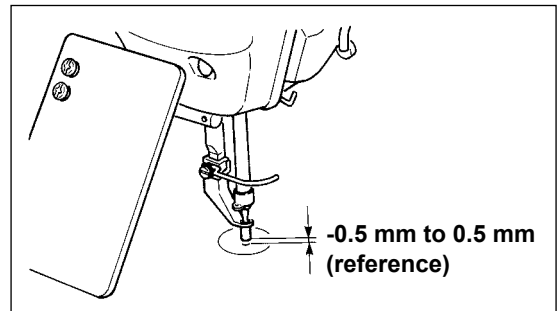
4-7. Intermediate presser height



When raising the intermediate presser height, turn the pulley by hand to lower the needle bar, and confirm that the needle bar does not interfere with the intermediate presser.



Press INTERMEDIATE PRESSER SETTING button **A** and adjust with TEN keys **B** so that the clearance between the bottom end of intermediate presser and the cloth is -0.5 to 0.5 mm (thickness of thread used).



- Clearance is large → Well-tensed seam is produced
- Clearance is small → Small clearance or no clearance (the state that the material is slightly pressed by the intermediate presser) is effective to prevent stitch skipping and isolated idling loops which are produced when the needle penetrates the bobbin thread.



For the intermediate presser, the height setting range displayed is from 0 to 7 mm. It has been factory-set to the range from 0 to 4 mm as an actual measurement at the time of shipment. Be aware that, if the set value of the intermediate presser height is 3 mm or less, the intermediate presser can interfere with the needle hole guide.

The actual height of the intermediate presser is 3 mm lower than the value entered with the TEN keys.

(Example)	Value entered with the TEN keys	Actual height
	7mm	4mm
	⋮	⋮
	4mm	1mm
	3mm	0mm

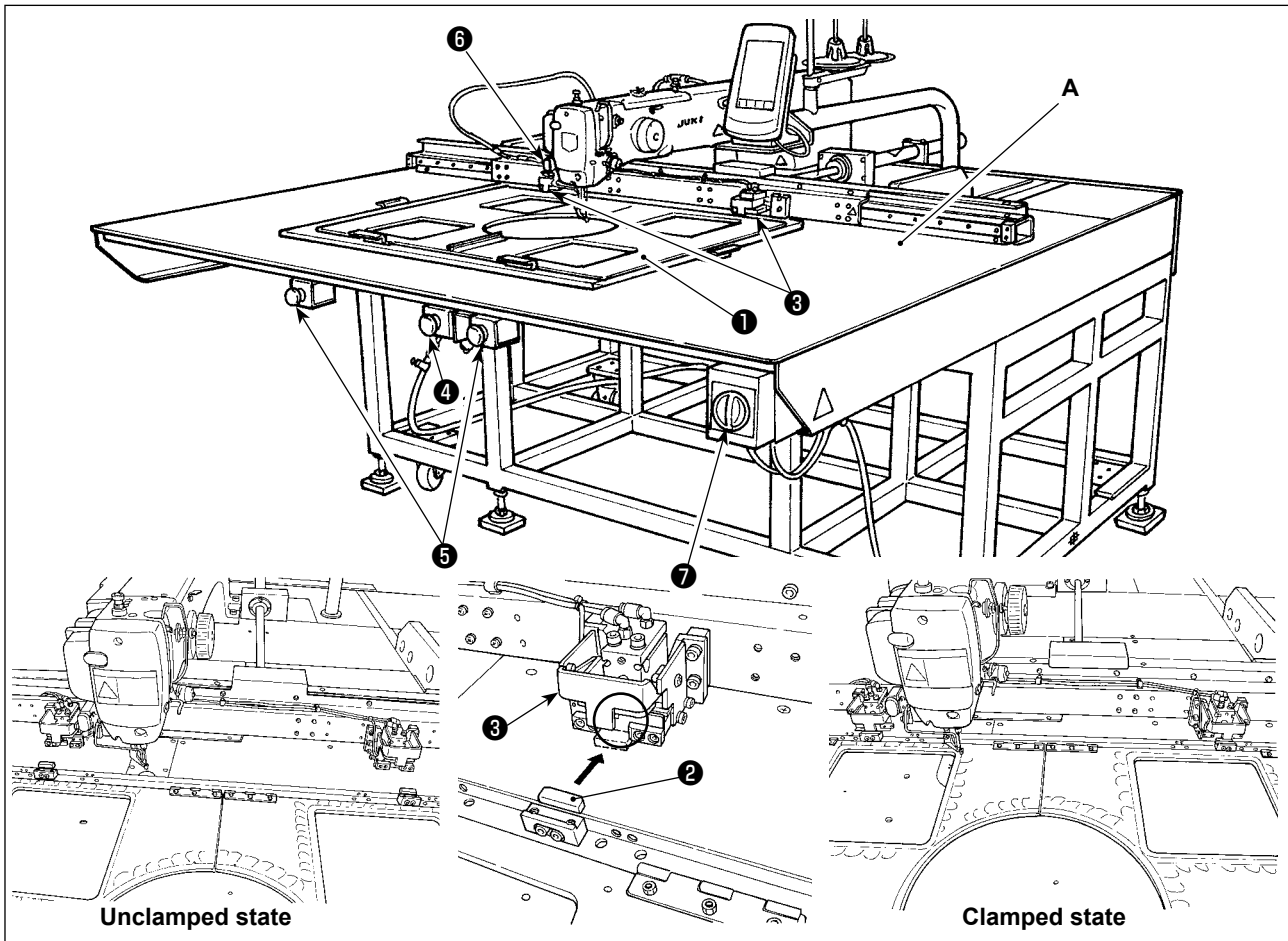
Enter the value of the intermediate presser height that does not cause interference between the intermediate presser and the needle hole guide referring to the aforementioned (Example).

4-8. Adjusting the thread take-up spring

Refer to "I-4-8. Adjusting the thread take-up spring" p.12 in the Instruction Manual for the AMS-224EN.


5. OPERATION OF THE SEWING MACHINE

5-1. Sewing



- 1) Fit projection ② of sewing cassette ① into the slit on auto-ejector ③. Now, sewing cassette ① is automatically clamped.
- 2) To unclamp the sewing cassette, press UNCLAMP switch ④.
- 3) Check that the sewing cassette is clamped. Then, press two two-hand control start switches ⑤ simultaneously to start sewing.



- When starting sewing, check to be sure that the sewing cassette is securely fixed in position. If not, personal injury or sewing machine breakage can be caused.
- If a clamp fault such as the slip-off of the clamp is detected during sewing, the sewing machine makes an emergency stop and the panel displays the message "PAUSE switch is pressed". In this case, however, the RESET button  is not displayed. In this case, turn the power switch OFF, close the air cock to discharge air (refer to "I-3-4. Installing the air hose" p.4). Remove the sewing cassette and turn the power switch ON. After having removed the cause of the clamp fault, carry out sewing again following the steps of procedure from step 1).
- If you turn the power switch OFF when the auto-ejector is in the unclamped state, the auto-ejector carries out clamping. So, be careful to protect fingers and other parts of your body against pinching by the auto-ejector.
- In the case of a faulty clamping (pinching of foreign matters, inadequate insertion of the sewing cassette), the sewing machine will not start sewing even if you press two two-hand control start switches ⑤ simultaneously. In this case, press UNCLAMP switch ④ to release the sewing cassette from the clamped state, remove the cause of faulty clamping, and start sewing again following the steps of procedure from step 1).
- Be aware that hands or fingers can be caught in opening A of the throat plate auxiliary cover during sewing or when the feed is brought forward by jump operation.

- 4) After the sewing, the auto-ejector automatically pushes out the sewing cassette to complete the sewing.
- 5) To temporarily stop the sewing machine during sewing, press PAUSE switch ⑥.
- 6) To stop the sewing machine in the event of an emergency, press POWER switch ⑦ which is also used as EMERGENCY switch.

5-2. Needle thread clamp device






The thread clamp device has been factory-set to OFF at the time of shipment. Leave it in the OFF state when using the sewing machine.

II. OPERATION SECTION (WITH REGARD TO THE PANEL)

1. PREFACE

The media supplied with the unit contains the following service patterns.

The operation panel for the AMS-224EN comes in the following four types.

Kind Area	H Type, G Type (Vinyl leather)	H Type, G Type (Denim)	H Type, G Type	H Type
4530 6030	ø 60 Pitch 3.6mm Pattern No. 101 	ø 60 Pitch 3 mm Pattern No. 102 	ø 60 Pitch 2.5 mm Pattern No. 103 	
6060	↑	↑	↑	Complex pattern shape Pitch 2.8 mm Pattern No. 010 

Refer to "II. OPERATION SECTION (WITH REGARD TO THE PANEL)" p.15 in the Instruction Manual for the AMS-224EN for the additional information.

III. MAINTENANCE OF SAWING MACHINE

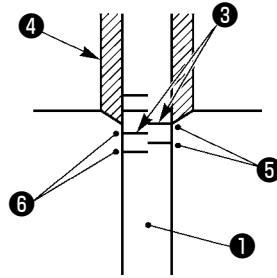
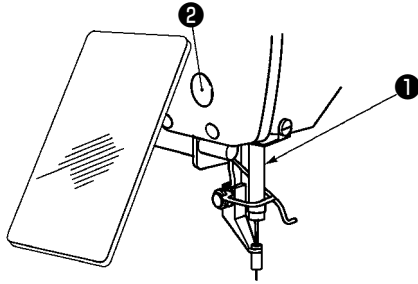
1. MAINTENANCE

1-1. Adjusting the height of the needle bar (Changing the length of the needle)



WARNING :

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



⑤ : Market line for DP x 17
(with needle count higher than #22)

⑥ : Marker line for DP x 17
(with needle count lower than #22)

* Turn ON the power once, and turn OFF the power again after making the intermediate presser in the lowered state.

- 1) Bring needle bar ① down to the lowest position of its stroke. Loosen needle bar connection screw ② and adjust so that the upper marker line ③ engraved on the needle bar aligns with the bottom end of the needle bar bushing lower ④ .
- 2) As illustrated in the above figure, change the adjusting position in accordance with the needle count. (The standard needle count is DP x 17 (B point), #24.)

* If sewing problems such as stitch skipping and thread breakage when the needle bar is set at the standard position, the problems may be fixed by finely adjusting the needle bar height within the range of one marker line.



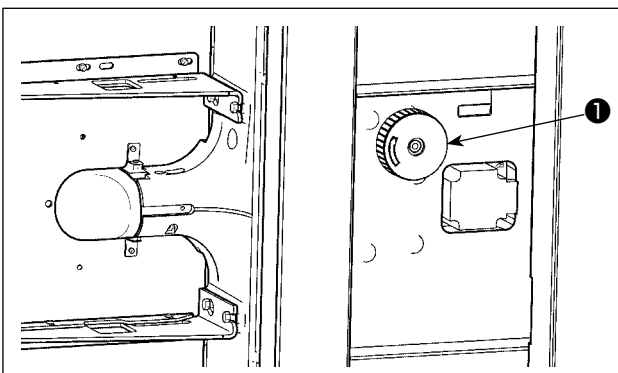
After the adjustment, turn the pulley to check for an extra load.

1-2. Adjusting the needle-to-shuttle relation



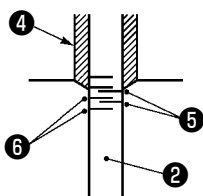
WARNING :

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



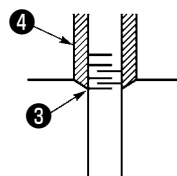
* Turn ON the power once, and turn OFF the power again after making the intermediate presser in the lowered state.

- 1) Turn hook driving shaft pulley ① by hand and adjust lower engraved marker line ③ to the bottom end of needle bar lower metal ④ when needle bar ② goes up.

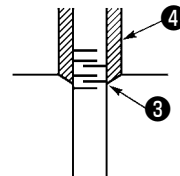


⑤ : Marker line for DP x 17 needle (with needle count higher than #22)

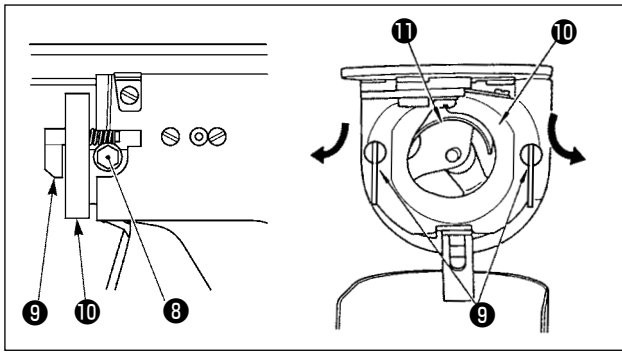
⑥ : Marker line for DP x 17 needle (with needle count lower than #22)



③ : When DP x 17 needle (of which needle count is lower than #22) is used.

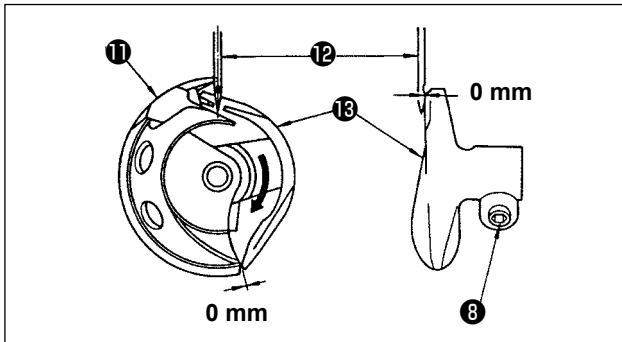


③ : When DP x 17 needle (of which needle count is higher than #22) is used.

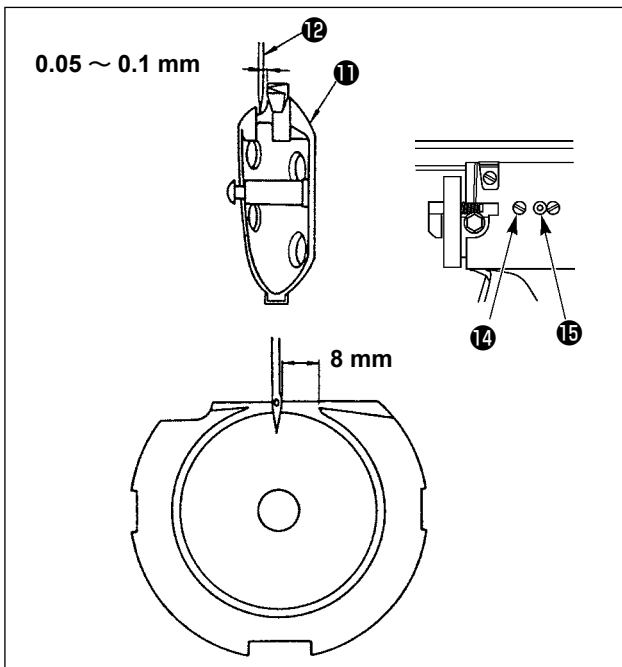


- 2) Loosen setscrew **8** in the driver. Drawing bobbin case opening lever hook **9** toward you, open it to the right and left until bobbin case opening lever **10** comes off.

Caution At this time, be careful not to let shuttle **11** come off and fall.



- 3) Adjust so that the point of shuttle **11** meets the center of needle **12**, and that a clearance of 0 mm is provided between the front end face of driver **13** and needle as the front end face of driver receives needle to prevent the needle from being bent. Then tighten setscrew **8**.



- 4) Loosen shuttle race screw **14**, and adjust the longitudinal position of the shuttle race. To do this adjustment, turn shuttle race adjusting shaft **15** clockwise or counterclockwise to provide a 0.05 to 0.1 mm clearance between needle **12** and the blade point of shuttle **11**.
- 5) After adjusting the longitudinal position of shuttle race, further adjust to provide a 8 mm clearance between the needle and the shuttle race. Then, tighten screw **14** of shuttle race.

Caution Carefully protect against personal injury caused by a possible contact with the sewing machine strut, switch, etc.

The cushioning materials are adhered on the sewing machine strut, switch, etc. in order to avoid personal injury.

Inspect the cushioning materials before the operation of the sewing machine for peeling and any other defects. Change the cushioning material with a new one if it has peeled off or has any defect.

→ Refer to "[I-4-4. Installing and removing the bobbin case](#)" p.8.

1-3. Adjusting the timing of main shaft and hook driving shaft

Refer to "[III-1-3. Adjusting the timing of main shaft and hook driving shaft](#)" p.105 in the Instruction Manual for the AMS-224EN.

1-4. Adjusting the vertical stroke of the intermediate presser

Refer to "[III-1-5. Adjusting the vertical stroke of the intermediate presser](#)" p.106 in the Instruction Manual for the AMS-224EN.

1-5. The moving knife and counter knife

Refer to "[III-1-6. The moving knife and counter knife](#)" p.106 in the Instruction Manual for the AMS-224EN.

1-6. Needle thread clamp device

Refer to "[III-1-7. Needle thread clamp device](#)" p.107 in the Instruction Manual for the AMS-224EN.

* The thread clamp device has been factory-set to OFF at the time of shipment. Leave it in the OFF state when using the sewing machine.

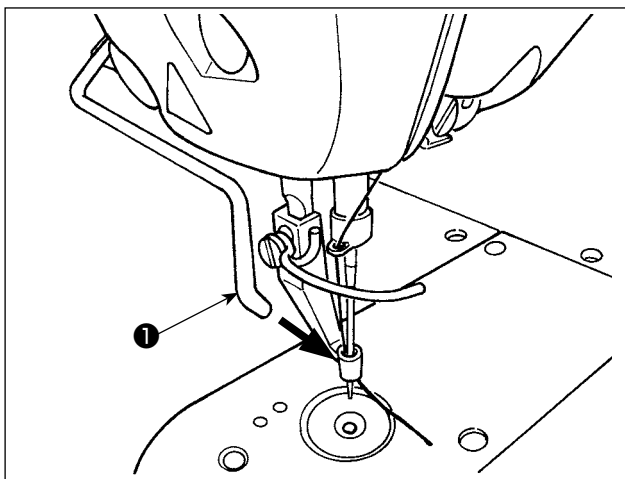
1-7. Thread breakage detector plate

Refer to "[III-1-8. Thread breakage detector plate](#)" p.107 in the Instruction Manual for the AMS-224EN.

1-8. Draining waste oil

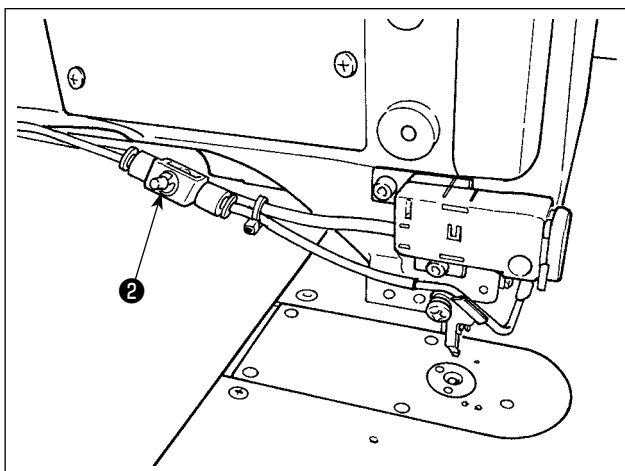
Refer to "[III-1-9. Draining waste oil](#)" p.108 in the Instruction Manual for the AMS-224EN.

1-9. Needle cooler unit



Thread breakage due to the rise in the needle temperature can be prevented by the use of the needle cooler unit.

- 1) The needle cooler unit blows compressed air to the needle through air nozzle ❶ and stops blowing simultaneously with the completion of sewing.



- 2) Turn flow regulating valve ❷ to fully open it, then give it two turns in the reverse direction. This procedure is the reference for the adjustment of the amount of air blow that does not swing the thread.

1-10. Amount of oil supplied to the hook

Refer to "III-1-10. Amount of oil supplied to the hook" p.108 in the Instruction Manual for the AMS-224EN.

1-11. Replacing the fuse

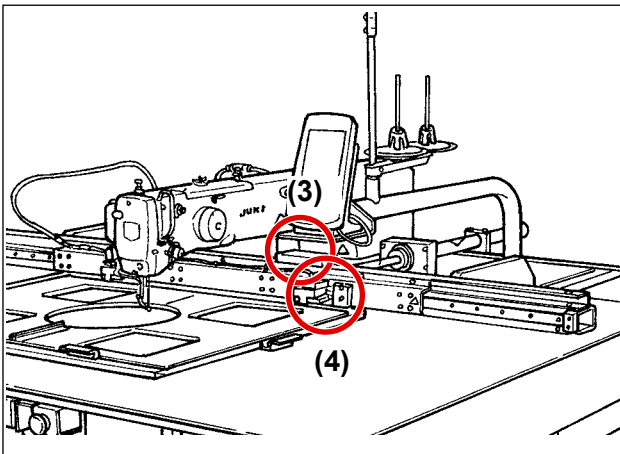
Refer to "III-1-11. Replacing the fuse" p.108 in the Instruction Manual for the AMS-224EN.

1-12. Changing the voltage of 100 ⇔ 200V

Refer to "III-1-12. Changing the voltage of 100 ⇔ 200V" p.109 in the Instruction Manual for the AMS-224EN.

1-13. Replenishing the designated places with grease

Refer to "III-1-13. Replenishing the designated places with grease" p.110 , "(1) Points to be applied with JUKI Grease A" p.111 and "(2) Points to be applied with JUKI Grease B" p.112 in the Instruction Manual for the AMS-224EN.

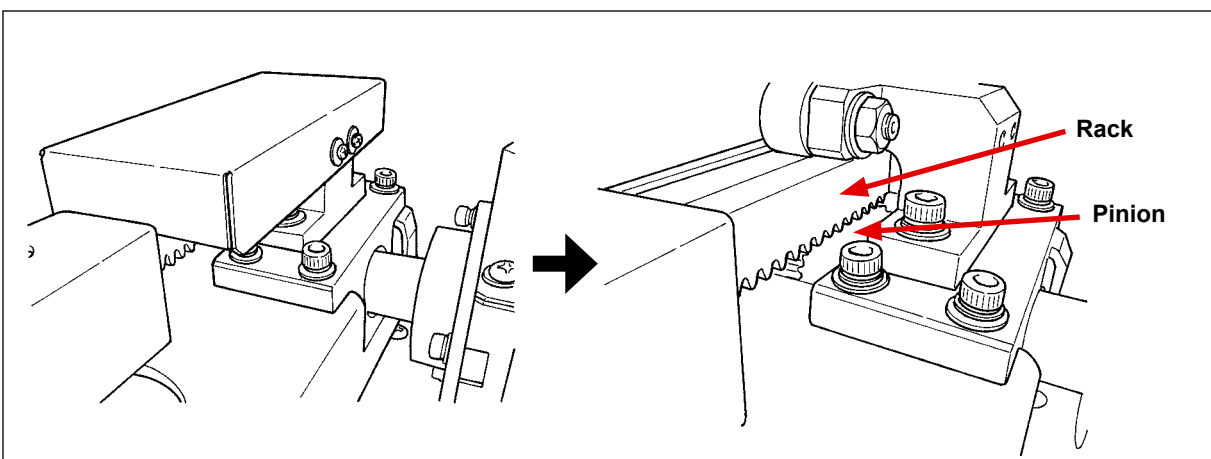


When the sewing machine has run out of grease, apply grease to the points marked with arrows shown below.

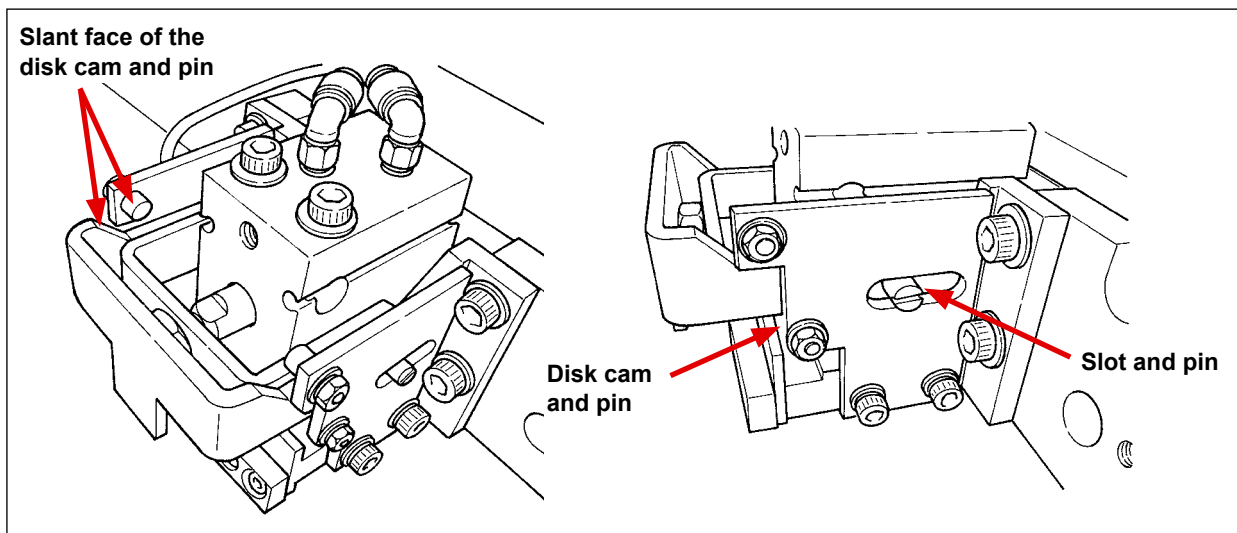


Running the sewing machine with no grease can cause the sewing machine failure and noise.

(3) Points of the feed gear section to be applied with grease



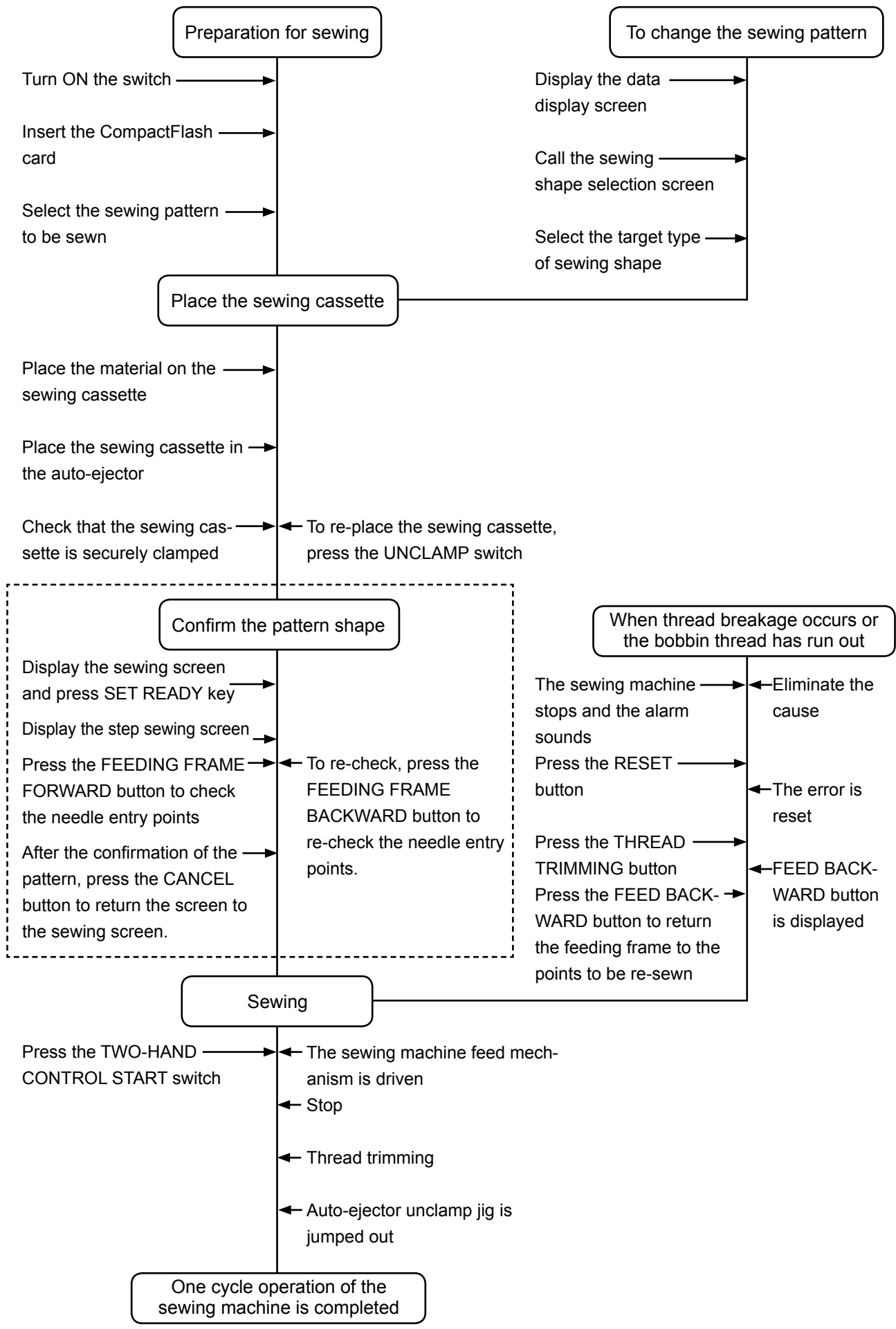
(4) Points of the cassette chuck section to be applied with grease



1-14. Troubles and corrective measures (Sewing conditions)

Refer to "III-1-14. Troubles and corrective measures (Sewing conditions)" p.113 in the Instruction Manual for the AMS-224EN.

2. OPERATION FLOWCHART



3. OPTIONAL

3-1. Table of Needle hole guide

Refer to "III-2-1. Table of Needle hole guide" p.115 in the Instruction Manual for the AMS-224EN.



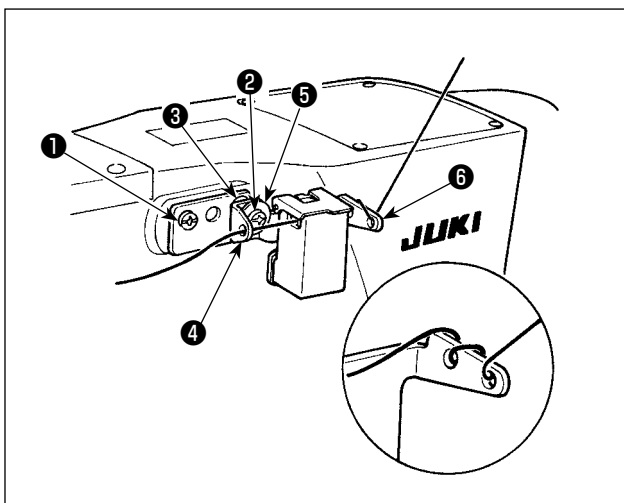
When the $\phi 3$ mm needle hole guide with counterbore (B242621000G) is used, well-tensed seams are produced. However, isolated idling loops may be produced in the case the needle penetrates the bobbin thread for some type of the material and thread. If such a trouble occurs, use the $\phi 3$ mm needle hole guide (B242621000F).

3-2. Silicon oil tank



WARNING :

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



When the thread is not adequately tensed, use the silicon oil tank asm. (40097301).

The silicon oil tank asm. should be fixed on the sewing machine by means of setscrews ① (SM-4041055SP) and ② (SM4042055SP) supplied with the unit. To tighten setscrew ②, tighten it together with thread guide collar ③ (11315108), silicon oil tank thread guide ④ (40010414) and thread guide setscrew washer ⑤ (WP0501046SC). Silicon oil tank thread guide ④ (40010414) should be placed so that it is in parallel with silicon oil tank base ⑥ (40096982).



If the thread twists hard on silicon oil tank base ⑥ (40096982), reverse the direction of winding the thread.

3-3. Bar code reader

Refer to "III-2-3. Bar code reader" p.116 in the Instruction Manual for the AMS-224EN.

3-4. Tension controller No. 3

When the thread is not adequately tensed, use the tension controller No. 3 (40072310).