SunStar®

User's Manual

SPS/D-BR1254H

Electronically Controlled Direct Drive Type Pattern Tacking Sewing Machine (Machine Structure Part)

1) FOR AT MOST USE WITH EASINESS, PLEASE CERTAINLY READ THIS MANUAL BEFORE STARTING USE.
2) KEEP THIS MANUAL IN SAFE PLACE FOR REFERENCE WHEN THE MACHINE BREAKS DOWN.

SUNSTAR MACHINERY CO., LTD.

MME-060214

1. Thank you for purchasing our product. Based on the rich expertise and experience accumulated in industrial sewing machine production, SUNSTAR will manufacture industrial sewing machines, which deliver more diverse functions, high performance, powerful operation, enhanced durability, and more sophisticated design to meet a number of user's needs.
2. Please read this user's manual thoroughly before using the machine. Make sure to properly use the machine to enjoy its full performance.
3. The specifications of the machine are subject to change, aimed to enhance product performance, without prior notice.
4. This product is designed, manufactured, and sold as an industrial sewing machine. It should not be used for other than industrial purpose.

SUNSTAR MACHINERY CO., LTD.

Contents

1

Machine Type and Specifications

1.1) Machine Type

Pattern Tacking Sewing Machine Type

SPS / D- BR 12□□ □□

① SunStar Pattern System

② Series Type
D: Motor Direct Drive

③ Purpose
H : Heavy materials
HC : Heat Cutter

④ Pattern Tacking S/M Name
54 : 50 × 40mm
63 : 60 × 30mm

⑤ Hook Type
R : Rotary hook

1.2) Specifications

Type	SPS/D-BR1254H	SPS/D-BR1254HC
Sewing Speed	2500spm	
Sewing Scope (X, Y)	50mm × 40mm	
Stitch Length	0.1~10mm	
Feed Plate Lift	20mm	
Presser Foot Lift	41.2mm	
Needle	DP17 × #21, DP17 × #23	DP17 × #25, DP17 × #26
Take Up Lever Stroke	72mm	
Hook	Full Rotary 3-fold Capacity Hook	
No. of Stitch Input	10,000 Stitches	
No. of Basic Pattern Input	56 Patterns	
Memory	EP RCM	
Zoom-in/out Scope	20~200%	
Motor	AC Servo Motor 500W	
Power consumption	600VA	
Height of Presser Foot	Air Cylingder Type	
Wiper	Air Cylingder Type	
Presser Foot	○	○
Secpmd Thread Tension	×	○
Heat Cutter	×	○
Power	Free Voltage (110V/220V)	

2

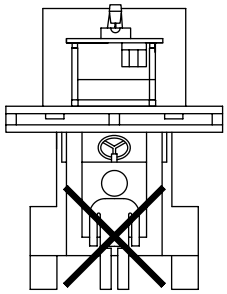
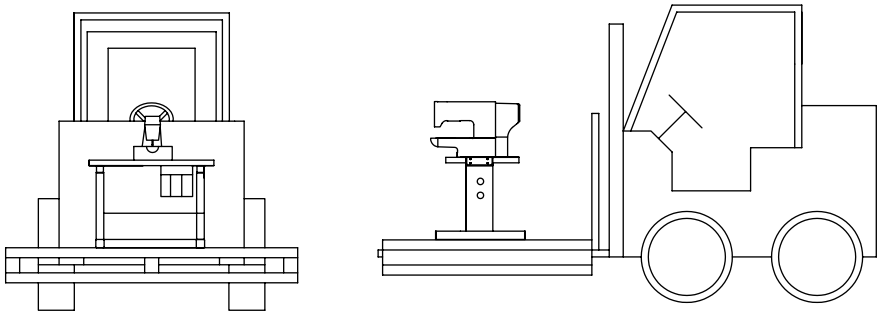
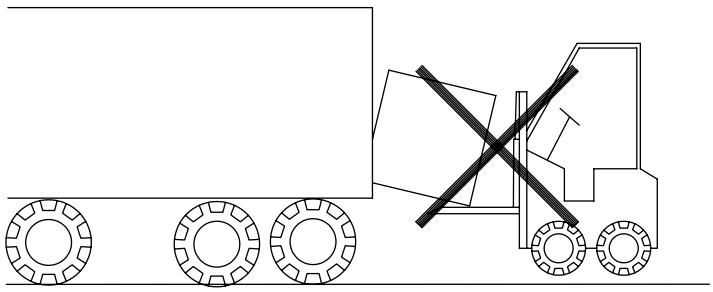
Safety Rules

2.1) Safety Marks

The safety marks in this user's manual are divided into **Caution**, **Danger**, and **Warning**. They indicate that if the safety rules are not kept, injury or damage to machine might occur as a result.

No.	Name	Description
 Caution	Caution	If the machine is not properly handled, it may cause injury to users or physical damage to the machine.
 Warning	Warning	If the machine is not properly handled, it may cause death or severe injury to users.
 Danger	Danger	If the machine is not properly handled, it may cause death or severe injury to users, and the urgency of the danger is very high.

2.2) Machine Delivery

Mark	Description
Danger  Ban people from standing under the machine and remove obstacles near the machine.	The machine delivery shall be conducted by the persons who are knowledgeable about the safety instructions and rules. The following safety rules must be observed: **2.2.1) Manual delivery** When the machine is delivered by persons, they shall wear special shoes and tightly hold the machine on the left and right sides. **2.2.2) Forklift delivery** 1) A forklift shall be big enough to endure the weight of the sewing machine and carry the machine. 2) Use the palette when lifting the machine. Set the gravity center of the machine (center of the left and right sides) at the fork arm of the forklift and carefully lift the machine.  Warning: Make sure to maintain the balance of the machine when unloading the machine by using a forklift or crane to prevent the deformation of the machine or to prevent people from being exposed to danger. 

2.3) Machine Installation

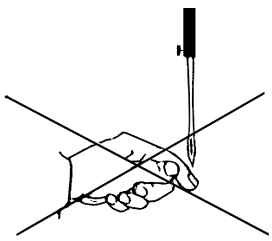
Caution

Depending on the installation environment, function errors, breakdown, or other physical damage might result. Make sure to meet the following conditions for machine installation:

1) The workbench or table where the machine is installed should be durable enough to endure the weight of the machine (see the name plate).
2) Dust and humidity are the cause of machine pollution and erosion. Please install an air conditioner and conduct regular maintenance of the machine.
3) Install the machine at the place where it is not exposed to direct sunlight (if the machine is exposed to direct sunlight for a long time, it may cause discoloration or deformation).
4) Secure the space around the machine. Place the machine at least 50cm away from the left, right, and rear walls to secure sufficient space for maintenance activities.
5) Explosion risk: To prevent possible explosion, immediately stop the machine operation if there are inflammable materials in the air.
6) Lighting: The machine does not offer lighting devices. When necessary, install needed lighting.
7) Overturn risk: Do not install the machine on the unstable stand or table. If the machine drops, it may cause injury or severe impact on the machine. If the machine is suddenly stopped or the external impact is imposed, the machine might be capsized.

2.4) Machine Operation

Warning



The machine body is attached with Caution and Warning stickers at each dangerous part to emphasize safety instructions. With the full understanding of the safety instructions, make sure to observe the following during machine operation:

1) Before turning on the power, read this manual thoroughly and have a full understanding of machine operation.
2) Get properly dressed. Long hair, necklace, bracelet, or wide sleeve might be fed into the machine during operation. Wear slip-free shoes to prevent slipping on the floor.
3) Check the moving scope of machine before its operation to find out whether the scope is proper.
4) Keep hands and head away from the machine parts where accidents might occur (needle, hook, thread take-up lever, pulley, etc.) during operation.
5) Do not remove the safety cover which protects pulley and shaft during machine operation for user's safety.
6) Cut the power supply before disassembling the electric box such as the control box, and double-check that the power switch is "Off."
7) Make sure that the power switch is "Off" when the upper shaft is manually rotated.
8) Stop the machine when the needle is replaced or when inspecting the machine after sewing work is done.
9) Make sure to follow the cautions below. Otherwise, physical damage to the machine such as malfunction and breakdown might result:
   - Do not put articles on the S/M table.
   - Avoid using a crooked needle or the needle with damaged tip.
   - Use the feed plate appropriate to working conditions.

2.5) Repair and Maintenance

When machine repair is needed, it shall be conducted by SunStar A/S engineers only who have finished the due training course.

1) For cleaning and repair, cut off the main power supply. Wait for 4 minutes before starting maintenance to make the machine completely discharged.

For main shaft motor and X,Y drive box, it takes 10 minutes before they are completely discharged after the main power is cut off.

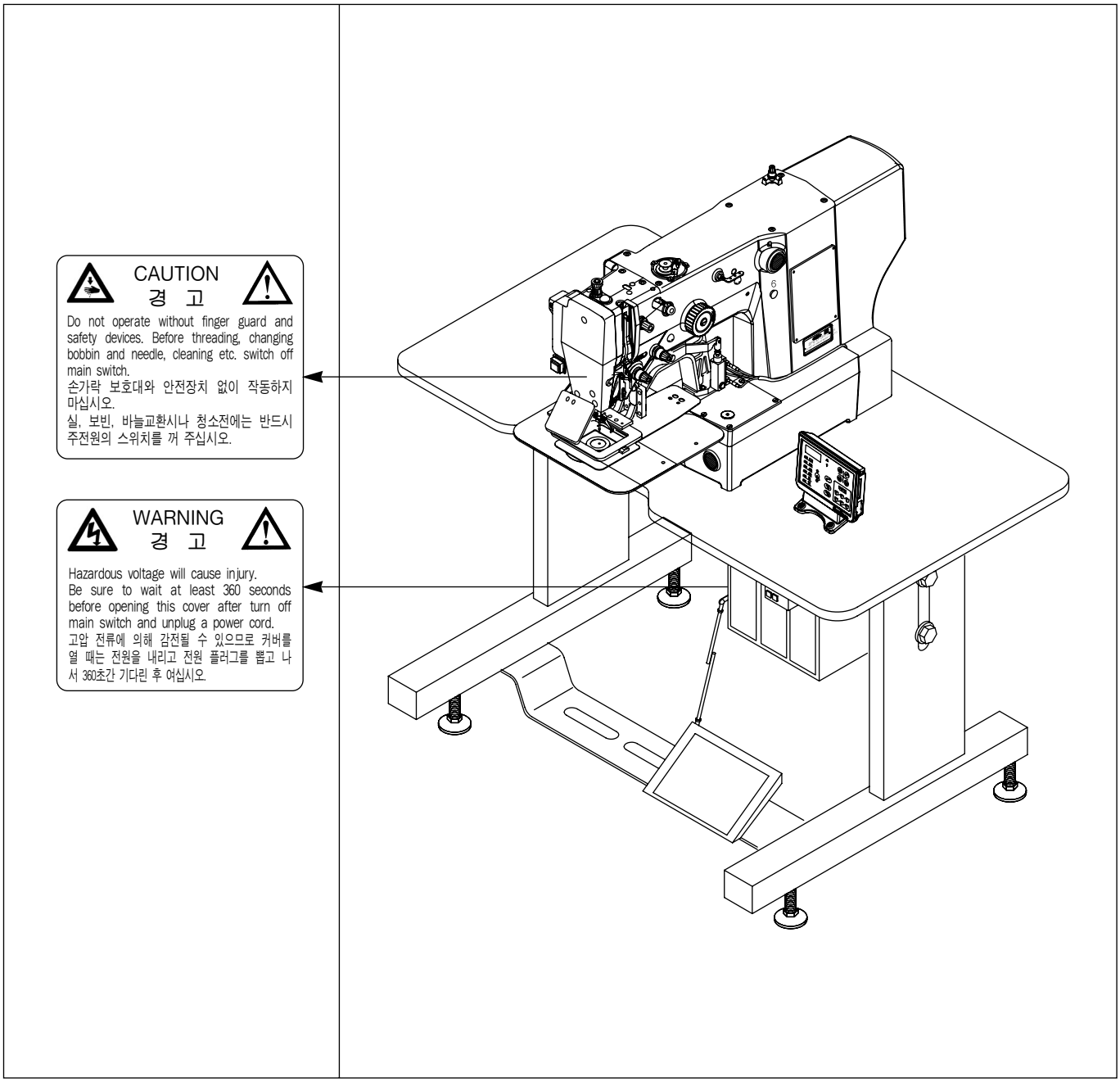
2) Do not modify the machine specifications or parts without substantial consultations with SunStar. Otherwise, it may threaten safety during machine operation.
3) Use the parts manufactured by SunStar to repair or replace the machine parts during A/S service.
4) When repairing is completed, re-install all the removed safety covers.

2.6) Type of Safety Labels

Do not operate without finger guard and safety devices. Before threading, changing bobbin and needle, and cleaning, turn off the main switch.

Hazardous voltage will cause injury.
Be sure to wait at least 360 seconds before opening this cover after turn off main switch and unplug a power cord.

2.7) Location of Safety Labels

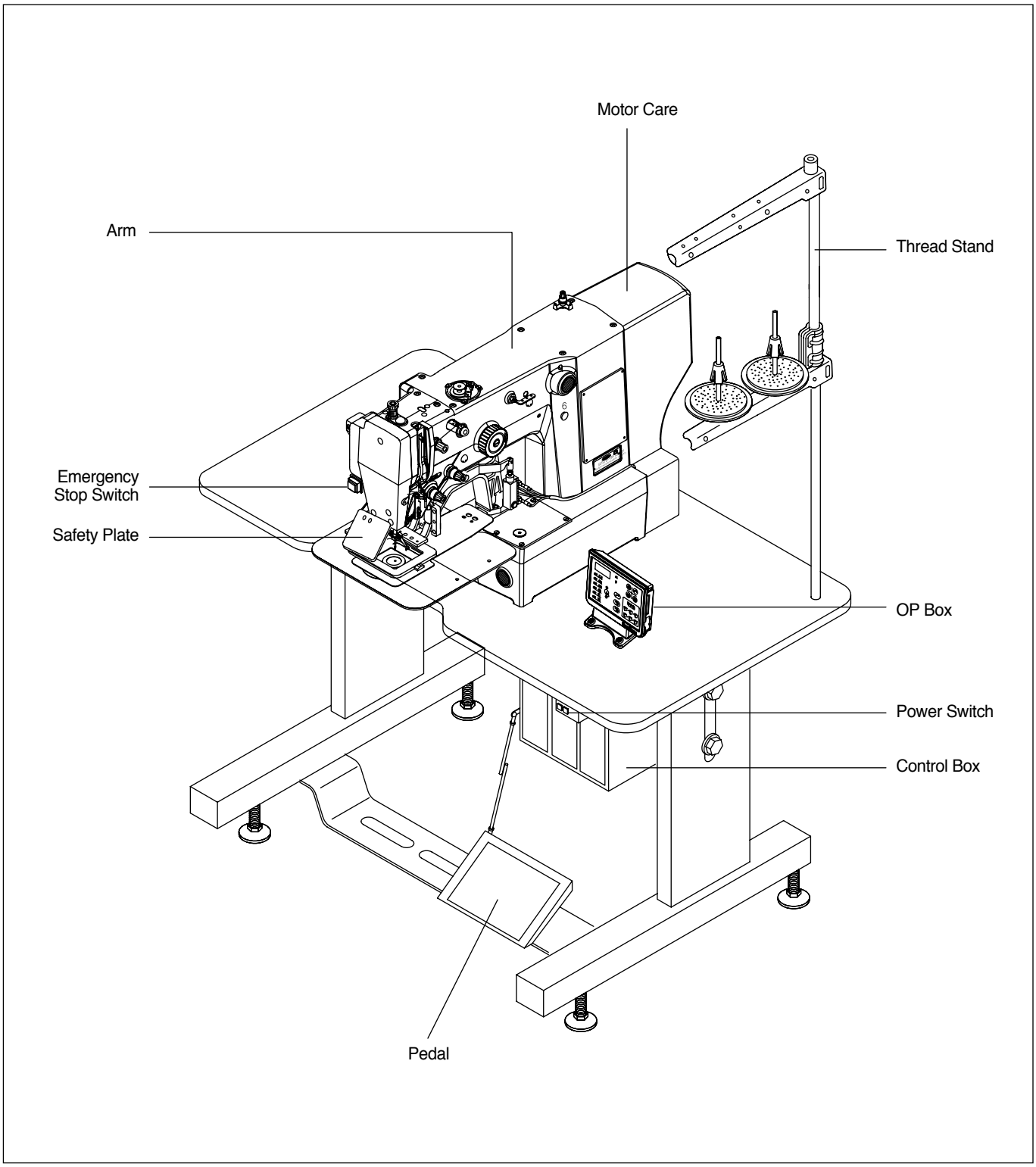


3

Assembly

3.1) Name of Machine Parts

3.1.1) Name of Machine Parts



3.2) Machine Installation

3.2.1) Installation Environment

1) To prevent accidents stemming from mal-operation, do not use the machine if the voltage is 10% above the rated voltage.
2) To prevent accidents stemming from mal-operation, make sure to check if the air pressure is proper before using any air pressure devices such as air cylinder.

Caution	To guarantee smooth operation of the product, the installation environment shall be prepared as described in User's Manual. Otherwise, unexpected damage might occur to the product.

3) Proper temperature during machine operation : 0° ~ 40°C (32° ~ 104°F)
4) Proper temperature during machine storage : − 25° ~ 55°C (− 13° ~ 131°F)
5) Humidity : Relative humidity – within 45 ~ 85%

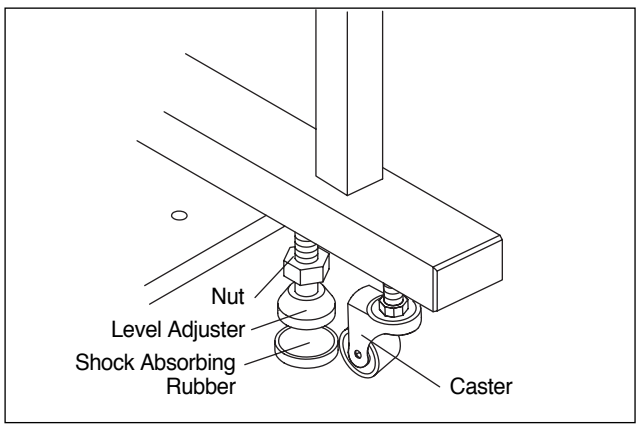
3.2.2) Electricity Environment

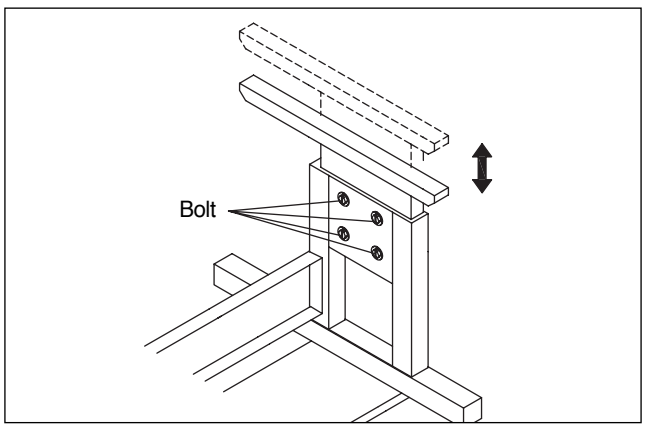
Warning	The voltage shall be within 10% of the rated voltage.

1) Power voltage
   - The power voltage shall be within 10% of the rated voltage.
   - It is recommended to use the power frequency within +/- 1% of the rated frequency (50/60Hz).
2) Noise of electromagnetic wave
   - Do not share the power with the products which have either strong magnetic field or use high frequency. Make the machine stay away from the products mentioned above.
3) Take care not to spill water and coffee on the machine.
4) Do not drop Control Box and the motor to the floor.

3.2.3) Table Installation

1) Table fixing
   - Insert the shock absorbing rubber into the level adjuster and raise it until the caster freely moves.
   - After the table is installed, tighten the nut to fix the level adjuster.
2) Table height adjustment
   - Use the bolts attached to the table to adjust the height of the table to make sure that the users can smoothly and conveniently work.





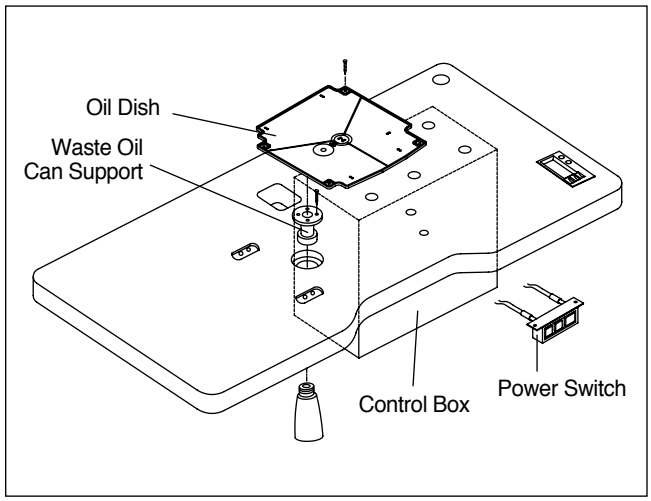
Caution

To prevent safety accidents, at least two persons shall be assigned to machine installation or machine delivery.

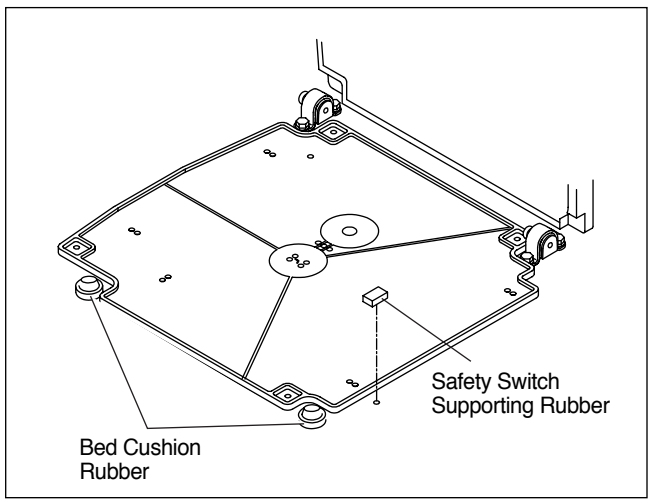
3.3) Machine Assembly

3.3.1) Table Assembly

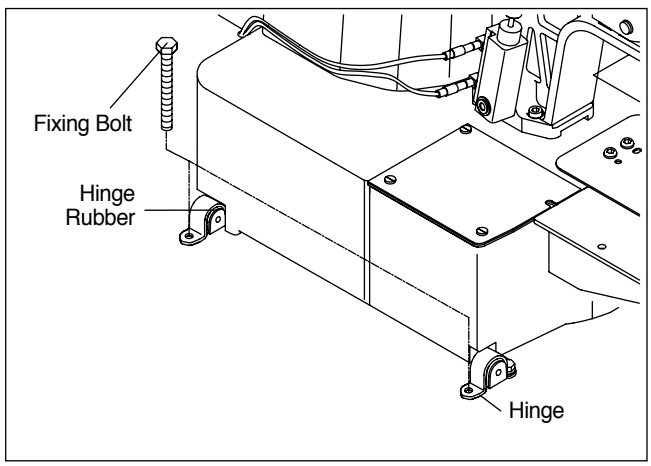
1) Install the waste oil can support, the oil dish, the control box, and the power switch on the table.



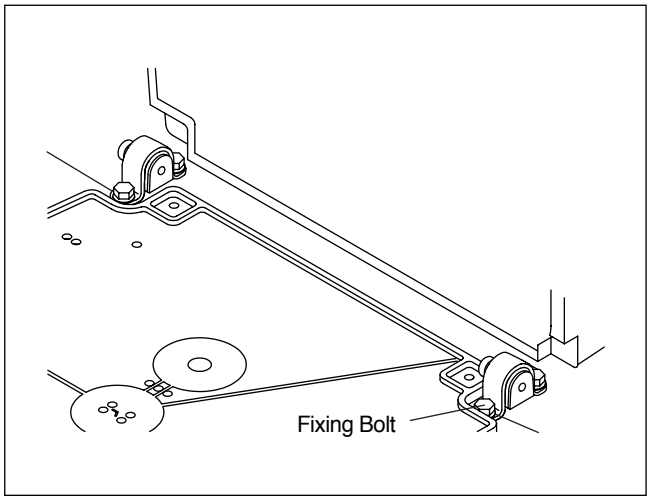
2) Install the bed cushion rubber and the support rubber for safety switch to prevent the machine vibration and noises from occurring.



3) To fix the machine, attach the hinge and the hinge rubber to the bed, and install them on the table by using fixing bolts.



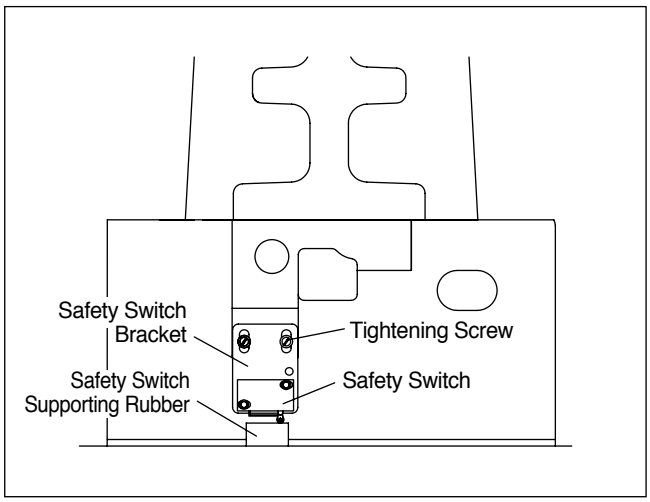
4) Since the machine has not been fully assembled, take caution to lean the assembled machine toward the floor, and insert and fasten the bolt into the hinge to completely fix the machine to the table.



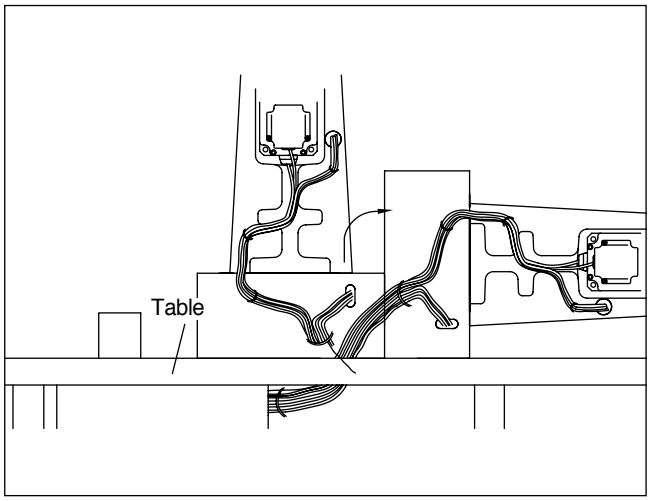
Caution

To prevent safety accidents, at least two persons shall be assigned to machine installation or machine delivery.

5) Install the safety switch and safety switch bracket on the sewing machine, and then adjust the bracket location of the safety switch to make sure that the attached safety switch can properly operate.



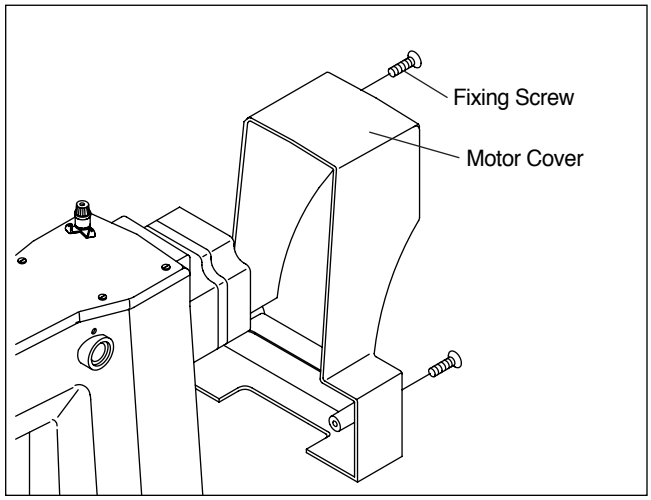
6) Complete the cable connection between the machine and the control box, and fix the cables under the table as in the figure (Determine the length of the cables when fixing in consideration of the machine's erection).



3.4) Accessory Installation

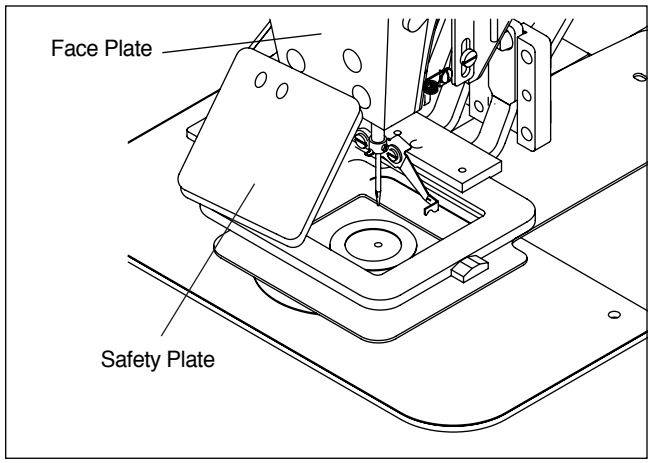
3.4.1) Installation of Motor Cover

Attach the motor cover to the rear side of the machine by using four fixing screws (4EA, small size).



3.4.2) Installation of Safety Plate

Attach the safety plate to the head.

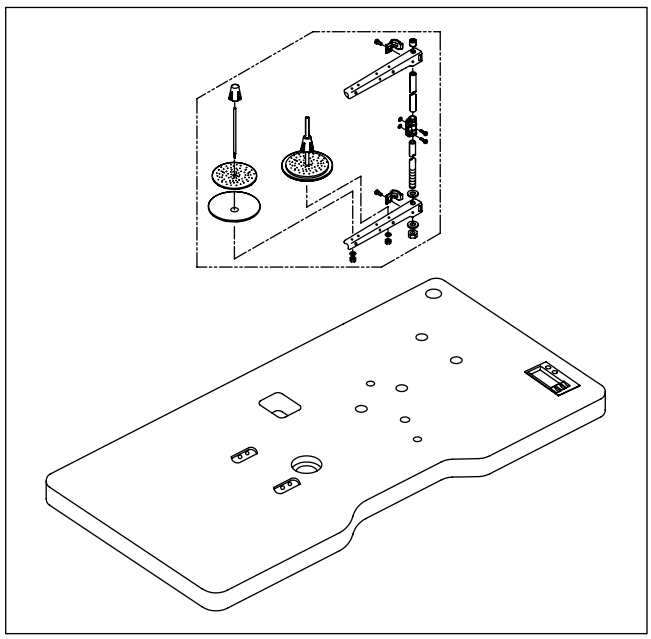


Caution

To guarantee safety, make sure to install the safety plate before using the machine.

3.4.3) Installation of Thread Stand

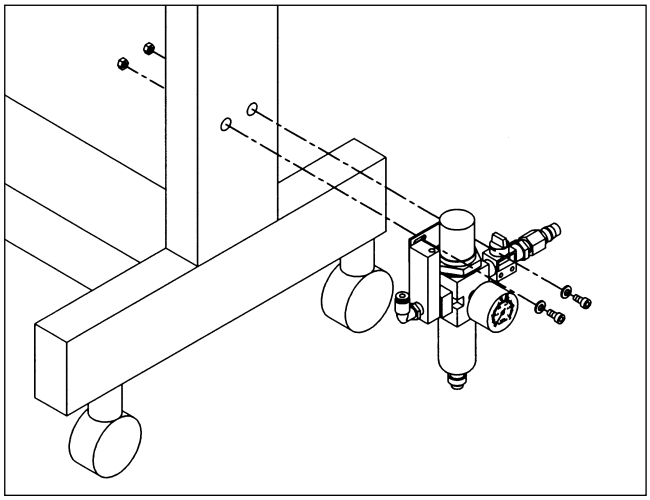
Assemble the thread stand and install it on the table.
Make adjustment to properly locate the thread stand.



3.5) Installation of Pneumatic Parts

3.5.1) Filter Regulator

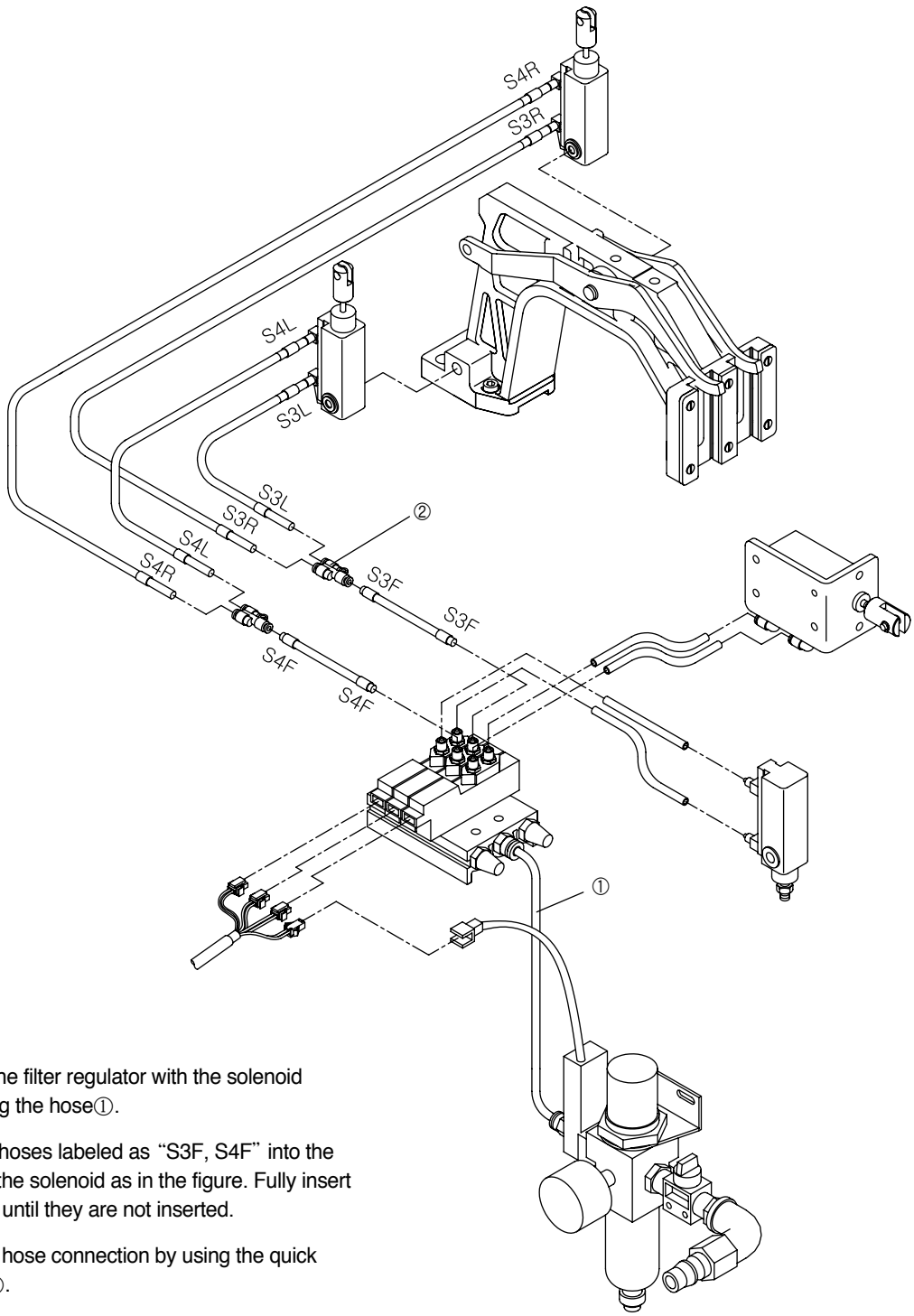
Install the filter regulator on the right side of the table leg.



Caution	1) Adjust the pneumatic pressure to 5~5.5kgf/cm (0.49~0.54MPa). 2) If the pneumatic pressure goes below 4kdf/cm, the error message appears, and at the same time the machine stops its operation [Error message : Err 24 (Low Pressure!)]. 3) When the finger valve is closed after use, the remaining air is automatically released, and the remaining pressure is displayed at 0Mpa (0kgf.cm).

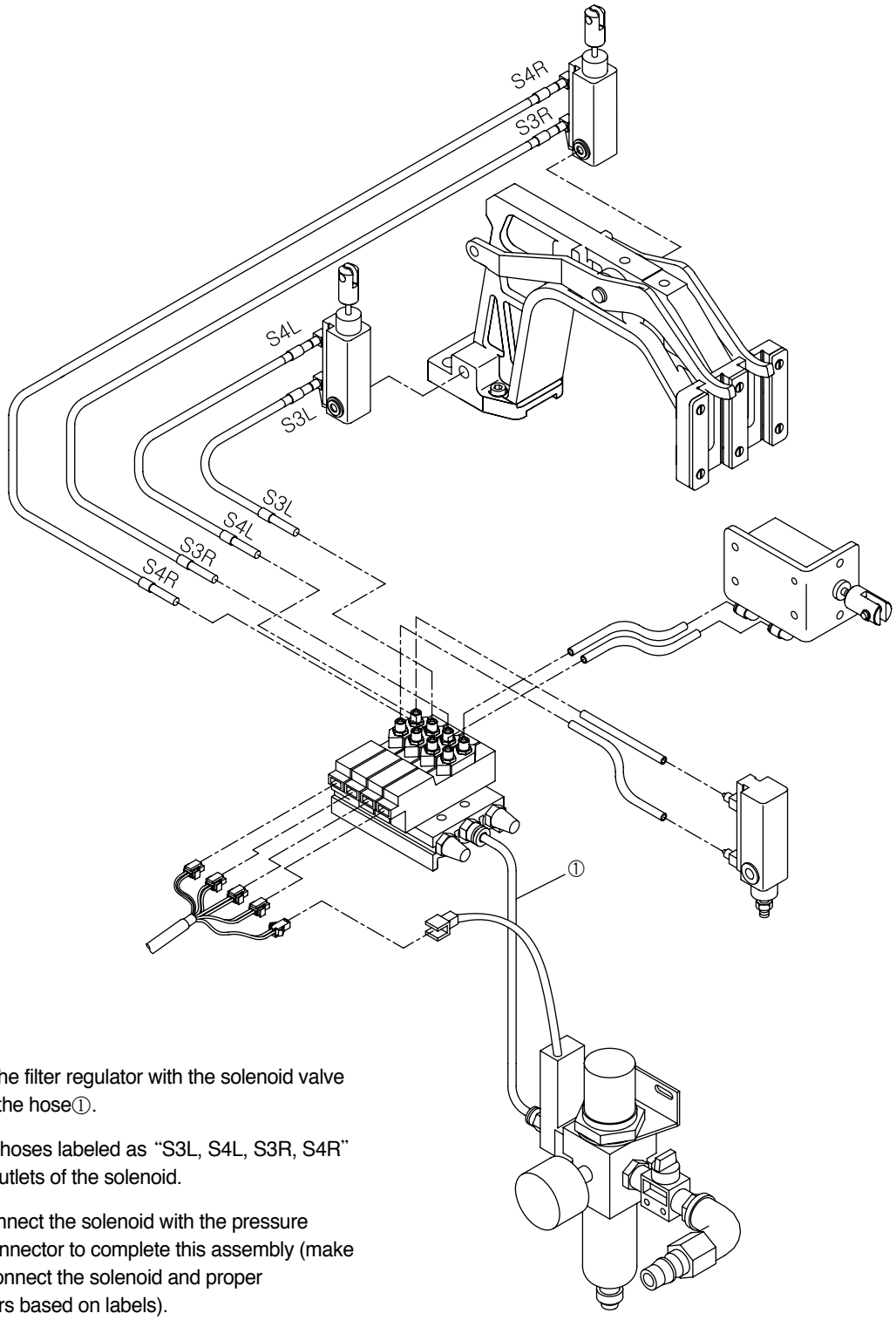
3.5.2) Pneumatic Hose Connection

1) Pneumatic hose connection for all-in-one type feed frame (SPS/D-BR1254A-20 / BR1263A-20)



1. Connect the filter regulator with the solenoid valve using the hose①.
2. Insert the hoses labeled as “S3F, S4F” into the outlets of the solenoid as in the figure. Fully insert the hoses until they are not inserted.
3. Finish the hose connection by using the quick coupling②.
4. Lastly, connect the solenoid with the pressure switch connector to complete the assembly of this part.

2) Pneumatic hose connection for separate type feed frame (SPS/D-BR1254A-22 / BR1263A-22)



1. Connect the filter regulator with the solenoid valve by using the hose①.
2. Insert the hoses labeled as “S3L, S4L, S3R, S4R” into the outlets of the solenoid.
3. Lastly, connect the solenoid with the pressure switch connector to complete this assembly (make sure to connect the solenoid and proper connectors based on labels).

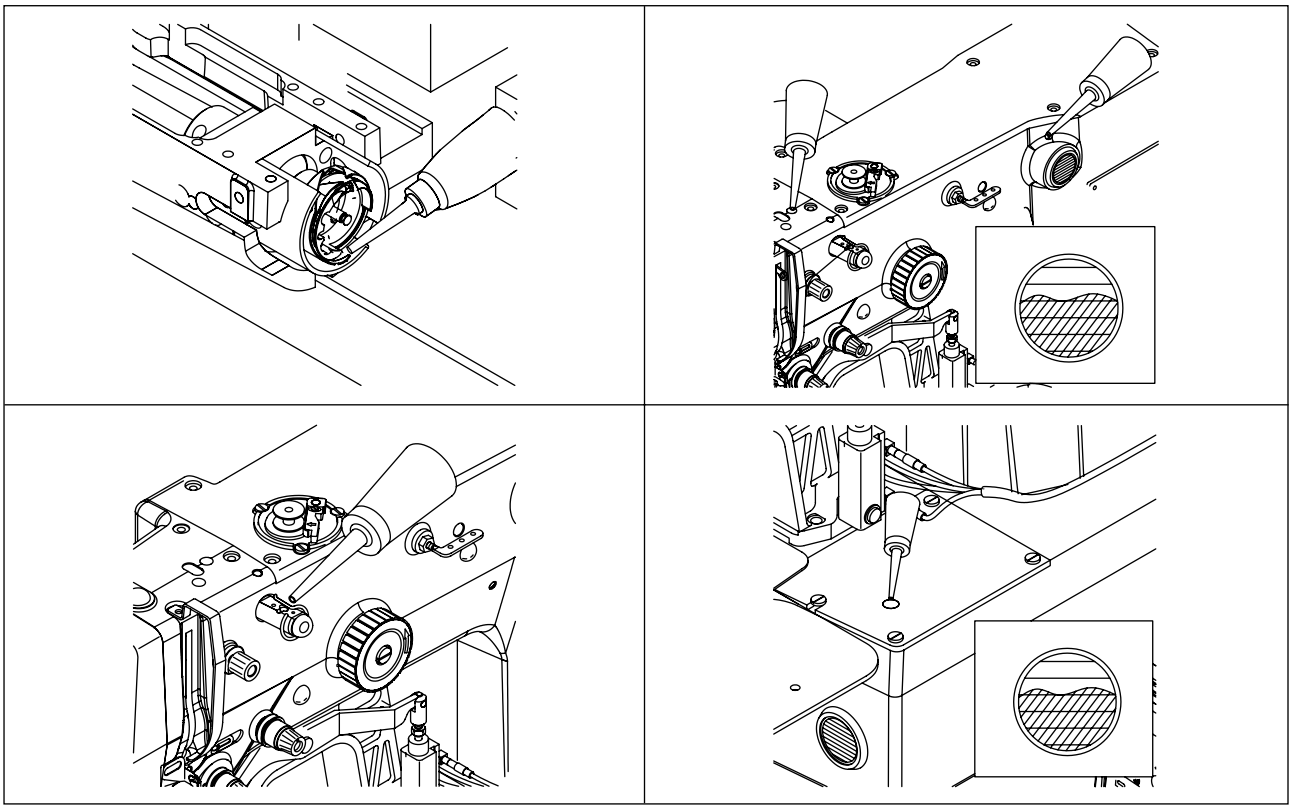
4

Machine Operation

4.1) Oil Supply

4.1.1) Supplying Location

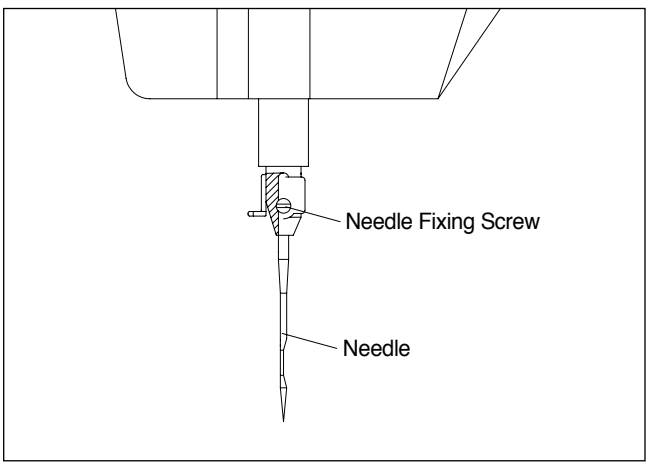
- In the first operation of the sewing machine, check the remaining volume of oil through the oil window and supply oil if it is found insufficient.



4.2) Needle

4.2.1) Needle Installation

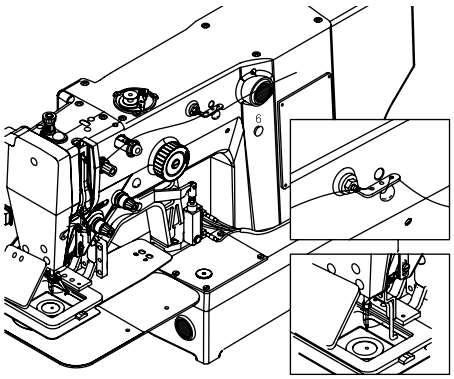
Loosen the needle fixing screw. With the long groove of the needle headed forward, insert the needle until the upper end of the needle touches the end of the hole, and fix the needle by using the needle fixing screw.



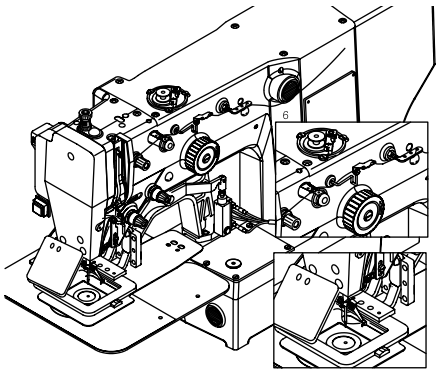
4.3) Thread

4.3.1) Upper and Lower Thread Placement

1) Upper Thread Placement
Place the thread take-up lever at the highest position, and pass the thread through the main and sub thread adjusting devices.

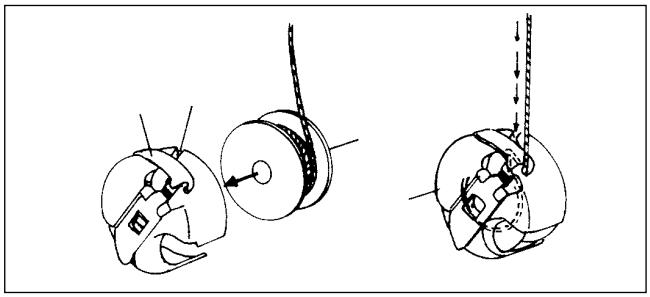


H-type Upper Thread Placement



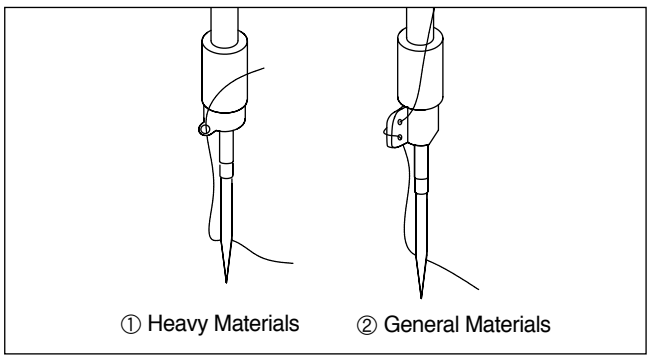
H-type Upper Thread Placement

2) Lower Thread Placement
Insert the bobbin into the bobbin case. Insert thread into the groove and pass it under the tension adjusting plate spring.



4.3.2) Threading

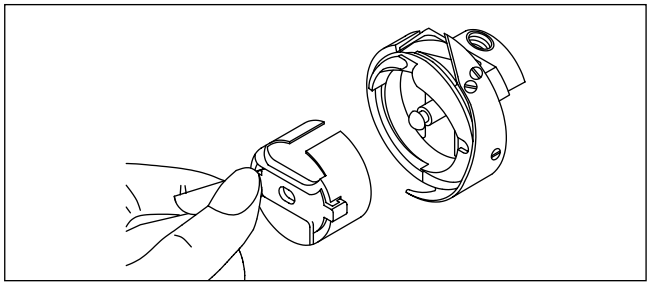
Place the thread take-up lever at the highest position and then conduct threading. For heavy materials, conduct threading as in Fig. ①, and for general and light materials and knit, conduct threading as in Fig. ②.



① Heavy Materials ② General Materials

4.3.3) Bobbin Case Insertion/Removal

Push the bobbin into the hook by holding the bobbin case handle until you hear a click sound.

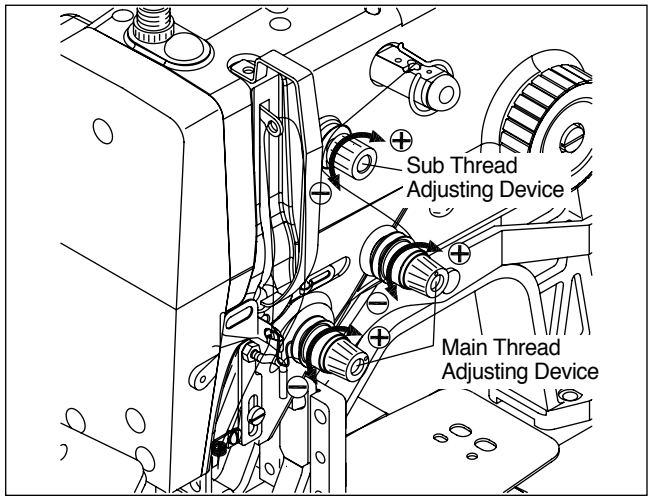


Caution

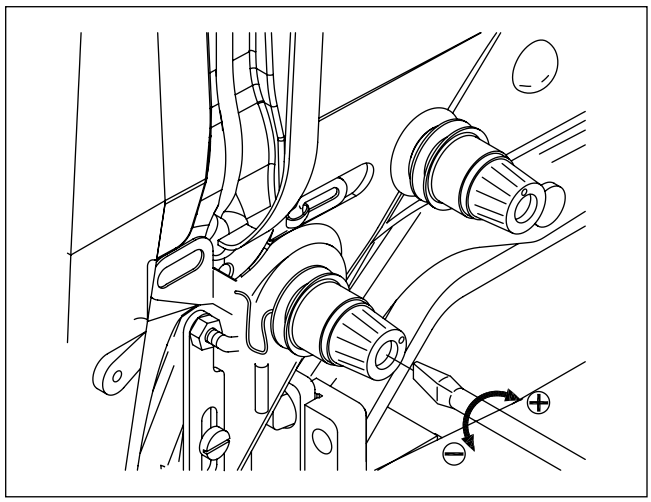
If the bobbin case and the hook are not accurately assembled, thread might be entangled or the bobbin case might be ejected during machine operation. Make sure that the bobbin case is completely inserted into the hook before operating the machine.

4.3.4) Tension Adjustment

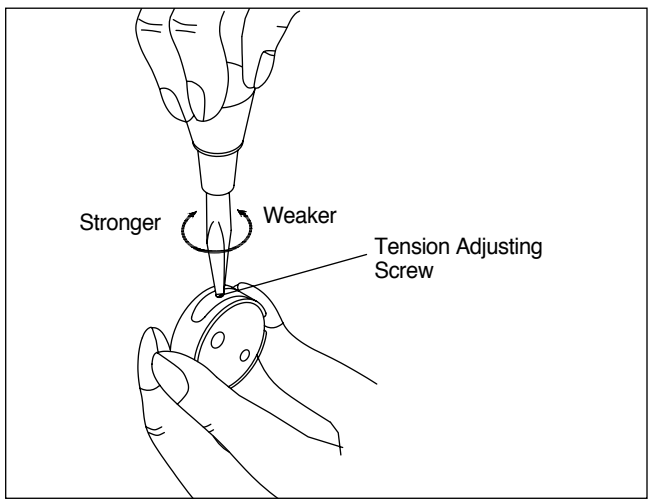
1) Adjustment of Upper Thread Tension
Turn the tension adjusting nuts of the main and sub thread adjusting devices clockwise, and the tension of the upper thread will grow strong. If they are turned in the opposite direction, the tension of the upper thread will grow weak.
Adjust the thread tension in accordance with the sewing conditions including sewing materials, thread, and number of stitches



2) Adjustment of Thread Take-up Lever Spring Tension
Adjust the tension of the thread take-up lever spring by turning the bolt on the main thread adjusting device axis with a drive. If the bolt is turned clockwise, the thread take-up spring tension is strengthened. Otherwise, the tension is weaker. (The standard movement volume is 6-8mm, and the standard tension is 30-50g.)

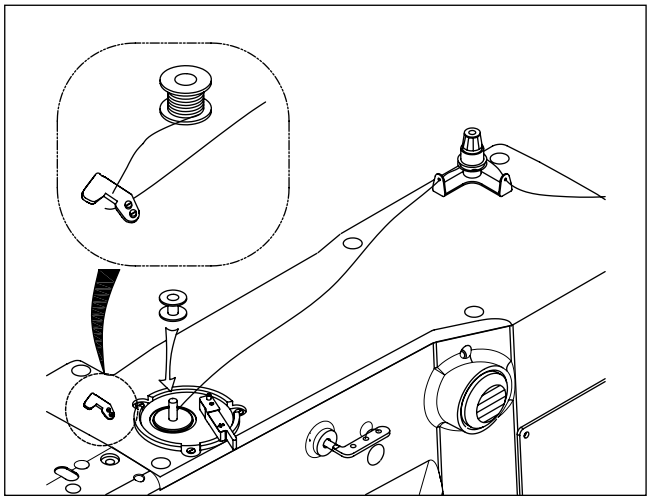


3) Adjustment of Lower Thread Tension
If the bobbin case tension adjusting screw is turned clockwise, the lower thread tension grows stronger. If the bobbin case tension adjusting screw is turned counter-clockwise, the lower thread' s tension grows weaker.



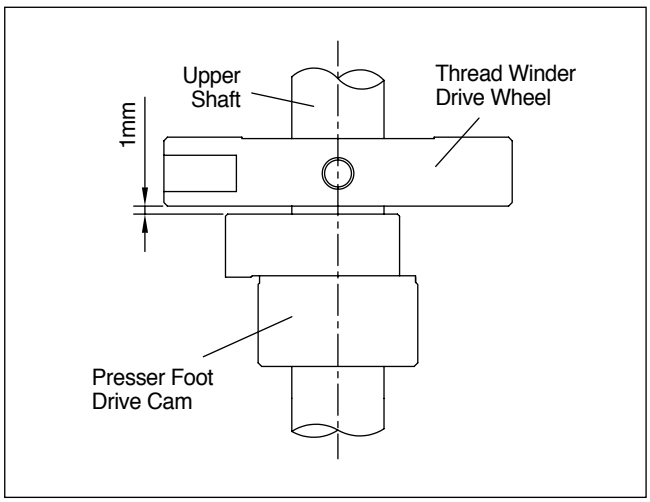
4.3.5) Lower Thread Winding

1) Press “Select” on OP Box and select the bobbin winder.
2) Insert the bobbin into the thread winding shaft on the thread winding base, which is attached to the top cover.
3) Attach the thread winding lever to the bobbin, and press the pedal to operate the machine.
4) After the thread winding lever is separated from the bobbin, use the thread winding blade to cut the thread of the bobbin.



4.3.6) Adjustment of Thread Winder Wheel Location

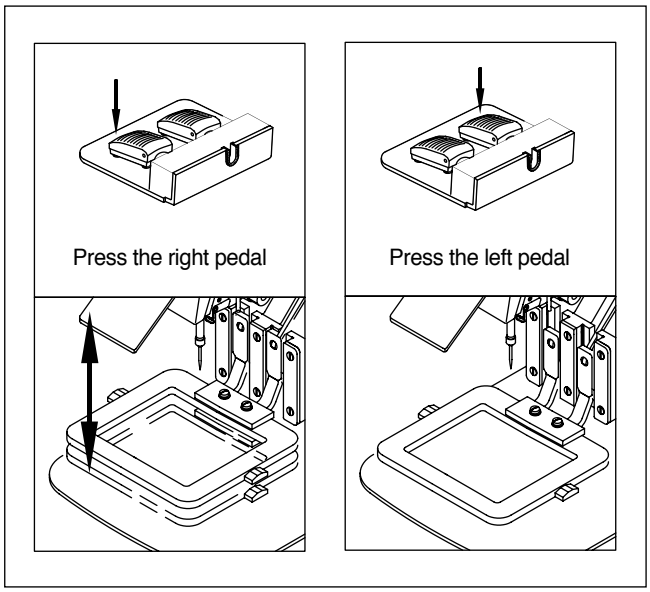
Adjust the thread winder wheel to be 1mm away from the presser foot driving cam and then fasten the tightening screw after the adjustment is completed.



4.4) Pedal Operation

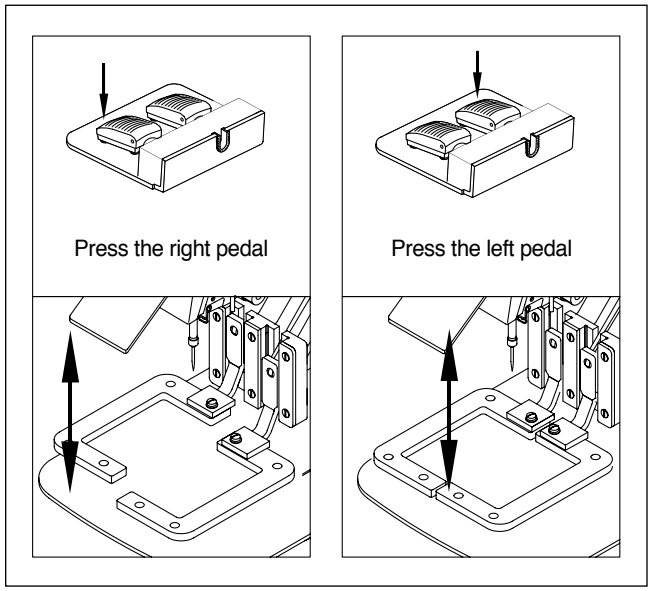
4.4.1) □□-20 Model

1) Install the pedal at the proper and most convenient place for users to work.
2) When the right pedal is pressed, the feed plate descends. When the pedal is pressed once again, the feed plate ascends.
3) If the left pedal is pressed after the feed plate descends, the sewing begins. When the sewing is finished, the feed plate ascends.



4.4.2) □□-20 Model

1) Use the right pedal to make the right feed plate ascend or descend.
2) Adjust the left pedal by step to regulate the movement of the left feed plate and sewing operation.
   - Step 1 : Adjust the left feed plate movement
   - Step 2 : Start the sewing (Provided that the right feed plate adjustment should be completed)
3) Regarding how to change parameter setting of the separate-type pedal, see page 18 of the Electricity and Electronics Manual.



4.6) Pressured Air Infusion and Adjustment of Air Pressure

Caution

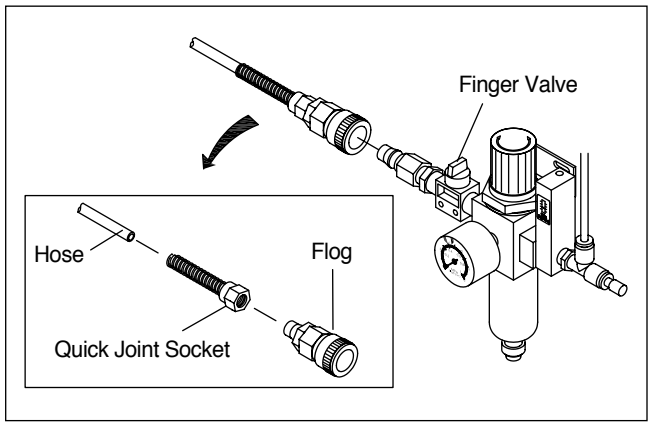
To prevent safety accidents from occurring, make sure that the power is off during this adjustment.

4.6.1) Pipe Connection for Pressured Air

- Connect the quick joint plug which is attached to the table with the quick joint socket where pressured air flows in.
- Open the finger valve to let the pressured air flow in.

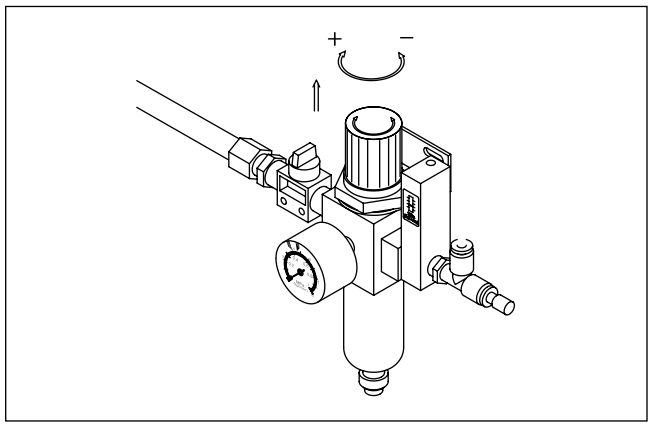
[Note]

When the finger valve is closed after use, the remaining air is automatically released, and the remaining air pressure is marked at 0 MPa(0 kgf/cm^2).



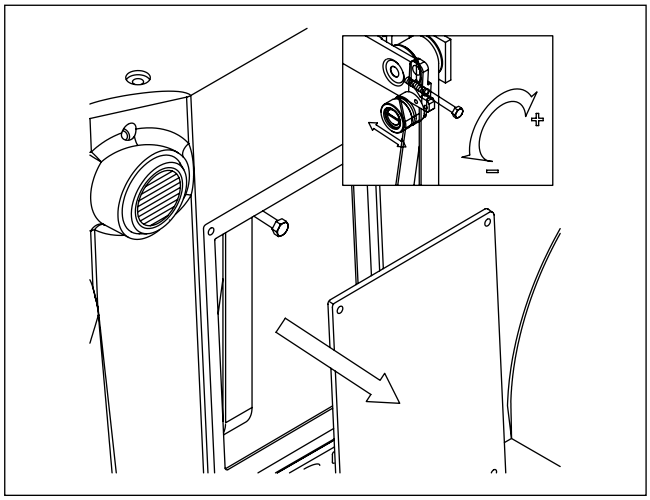
4.6.2) Adjustment of Air Pressure

Pull up the adjusting knob on the top of the filter regulator and turn it clockwise. Then the air pressure increases, and vice versa. This way, adjust the pressure to the appropriate level of 0.49~0.54 MPa (5~5.5 kgf/cm^2) and then return the adjusting knob to the original place.



4.7) Adjustment of Driving Belt Tension

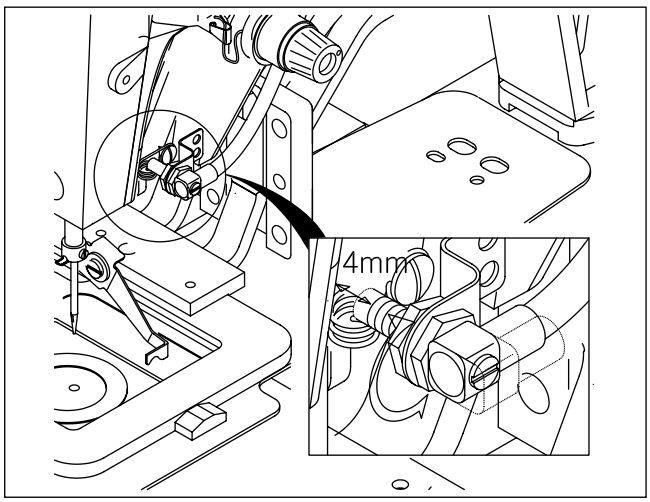
1) Disassemble the front arm cover.
2) When it is turned in the (+) direction, the tension increases. But when it is turned in the (−) direction, the tension decreases.



4.8) Upper Thread Holding Device (Optional)

4.8.1) Adjustment of Upper Thread Holding Device

- Check whether the upper thread holder pin's cylinder knuckle and cap are located in the middle of the upper thread path.
- If not, loosen two fixing screws for the upper holder pin cylinder bracket and make adjustment to make the cylinder knuckle and cap located in the middle. When the adjustment is completed, tightly fasten the fixing screws.
- The standard distance between the end of the knuckle cap and the arm is 4mm.
- To adjust the distance, loosen the two pin cylinder nuts and make the back and front adjustment. When the adjustment is completed, tightly fasten the two nuts.

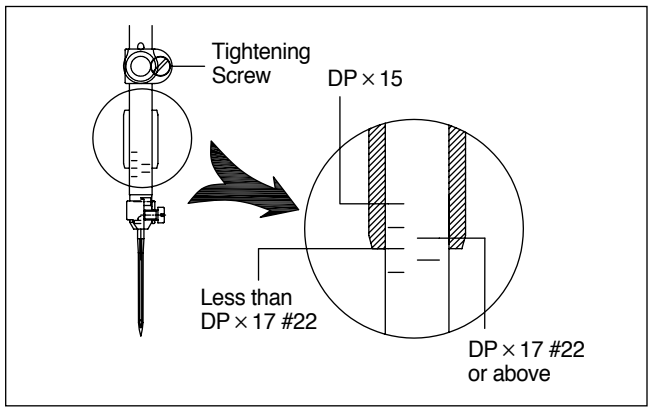


5

Maintenance

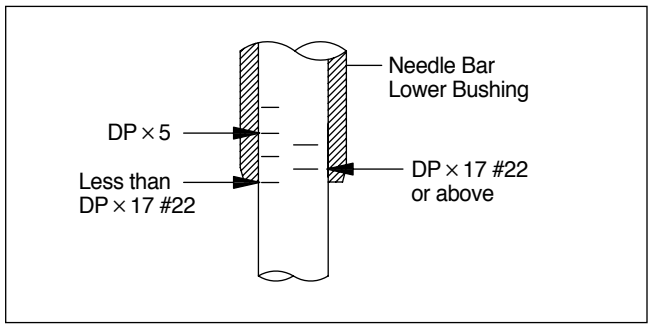
5.1) Adjustment of Needle Bar Height

Place the needle bar at the lowest position, and loosen the needle bar holder screws. Find an upper carved line appropriate to the needle specifications, and make the line touch the bottom of the needle bar bushing. When the adjustment is completed, fasten the tightening screw for the needle bar holder.



5.2) Adjustment of Needle and Hook

Locate the needle bar at the lowest position. When the needle bar ascends, make the lower carved line appropriate to the needle used touch the bottom of the bushing.

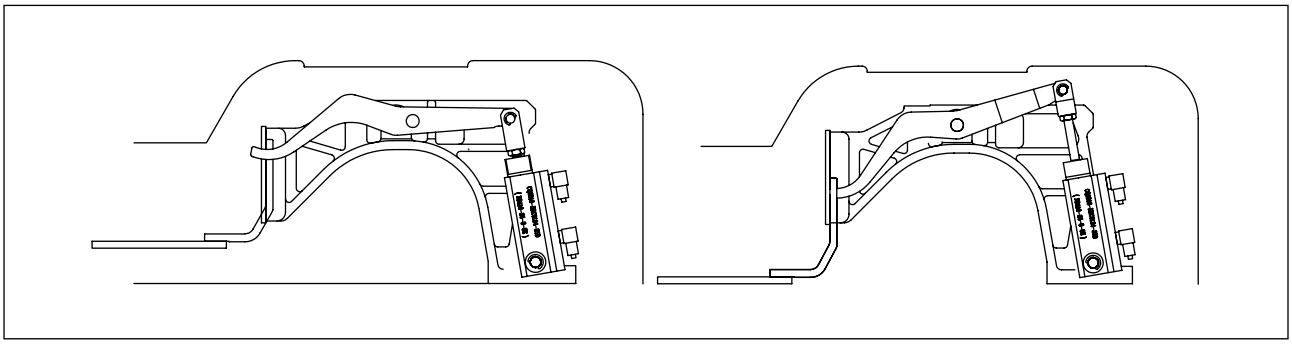


5.3) Adjusting Feed Plate Height

5.3.1) Adjusting Method

To adjust the height of the feed plate, change the feed plate height according to the length of the cylinder shaft which is connected to the cylinder arm.

Cylinder Shaft Length	Feed Plate Height
Increase	Decrease
Decrease	Increase



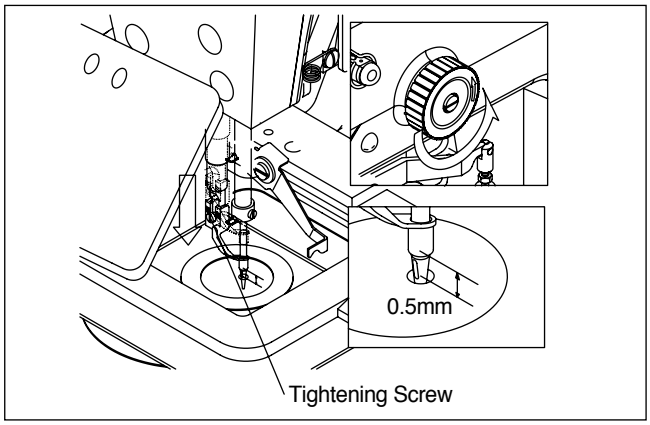
Caution

After completing the adjustment of the feed plate height, tightly fasten the cylinder knuckle fixing nut.

5.4) Adjustment of Presser Foot Height

5.4.1) Adjusting Method

- Loosen the fixing screw for the presser foot when the needle bar is at the lowest position.
- Adjust the presser foot height by setting the distance between the bottom of the presser foot and the sewing materials to be 0.5mm (thickness of the thread used), and fasten the fixing screw.



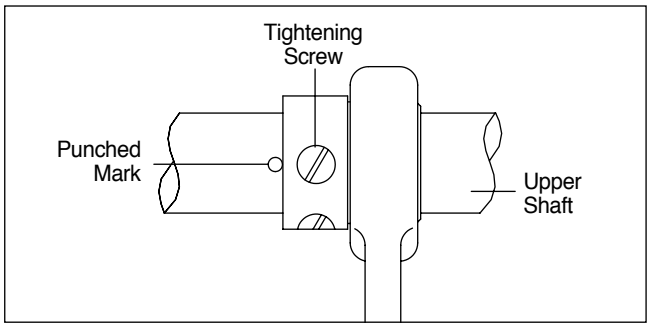
Caution

It is required to check the wiper after adjusting the presser foot height.
- If the gap is too big, it may cause stitch skip.
- If the gap is too small, it may cause bad thread adjustment.

5.5) Adjustment of Presser Foot-related Devices

5.5.1) Adjustment of Presser Foot Driving Cam

Make the end of the presser foot driving cam located at the center of the punched mark of the upper shaft. Make the adjustment to make the cam's carved line and the upper shaft's punched mark overlap, and then fasten the tightening screw.

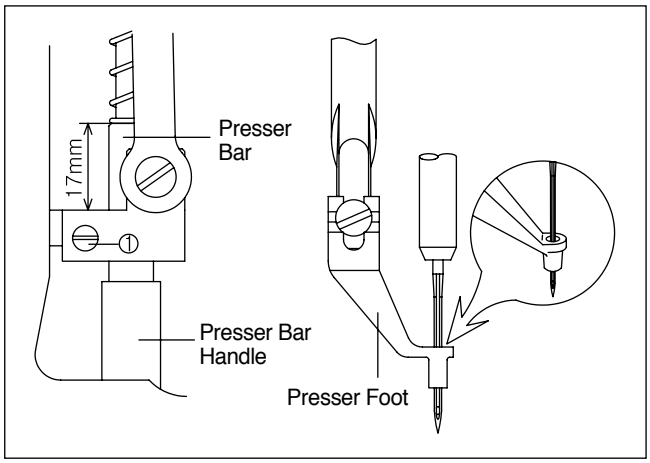


Caution

If the presser foot driving cam is not properly located, the up/down movements of the presser foot do not have harmonious timing. It may cause clash between the needle bar and the presser foot.

5.5.2) Adjustment of Presser Plate Height

- Adjust the presser plate to make its end protruded from the presser plate handle by 17mm. Check whether the needle goes through the center of the presser foot.
  When it is confirmed, fasten the tightening screw.



Caution

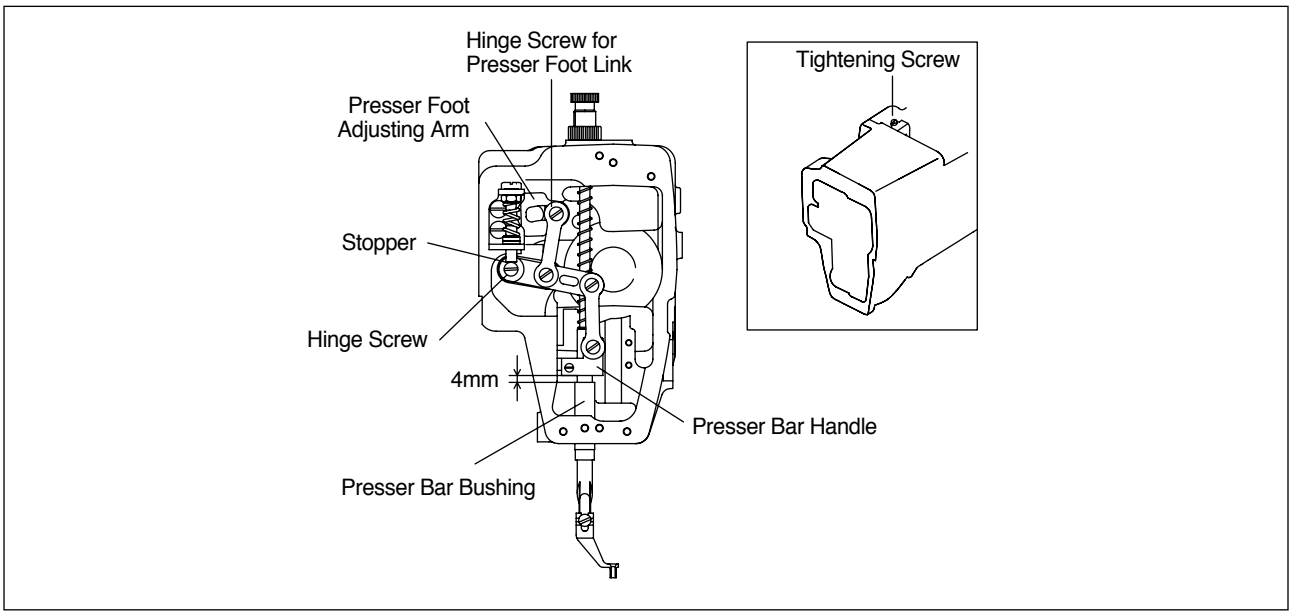
Fasten the tightening screw for the presser plate at the pressure of 40~45kgf/cm3. If the pressure is excessive during assembly, it may case deformation of the presser plate and obstruct proper operation of the machine.

5.5.3) Adjustment of Presser Foot Adjusting Arm

- Loosen the screw for the location link stopper to make space between the location link stopper and the hinge screw for the presser foot driving link.
- Loosen the screw for the fork link, and move the hinge screw for the presser foot link to the right side of the presser foot adjusting arm. Then tightly fasten the hinge screw for the presser foot link.
- Turn the hand pulley to locate the needle bar at the lowest position.
- Lift the presser bar to make the gap between the presser bar handle and the presser bushing 4mm wide, and tightly fasten the tightening screw for the fork link.
- Turn the location link stopper screw to make the location link stopper and the hinge screw for the presser foot driving link closely contacted.
- Tightly fasten the tightening screw for the fork link and ensure that there is no clearance in the vertical direction for the presser foot adjusting arm. Check the tightened conditions of screws, and adjust the presser foot stroke.

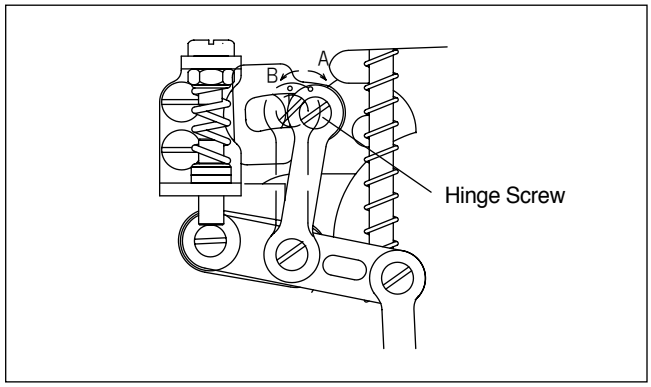
Caution

1) If there is no space between the presser bar handle and the presser bar bushing, they may intervene in each other during machine operation.
2) If the screws are not tightly fastened after making adjustment, it may cause damage to the machine during operation.
3) If the hinge screw for the presser foot driving link does not closely contact the end of the location link stopper, the machine might vibrate and produce loud noises during operation.



5.5.4) Adjustment of Presser Foot Stroke

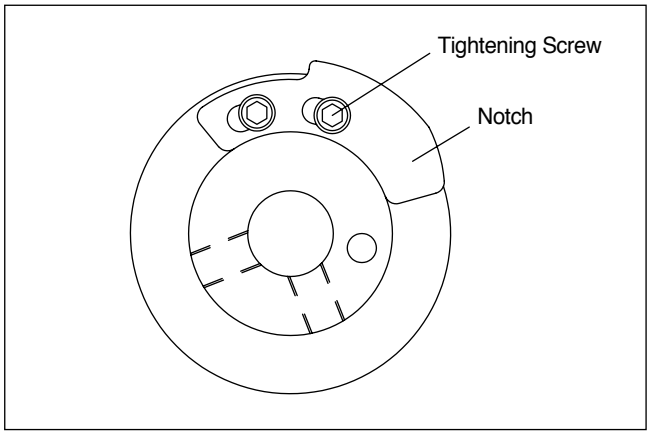
Loosen the hinge screw for the presser foot adjusting arm and move it in the (A) direction. Then the presser foot's stroke gets larger. When it is moved in the (B) direction, the presser foot's stroke gets smaller (the default setting is 4mm).



5.6) Adjustment of Thread Release-related Parts

5.6.1) Thread Release Notch Position Setting

Move the notch to make the tightening screws touch the right side of holes on the notch, and fasten the notch by using the tightening screws.

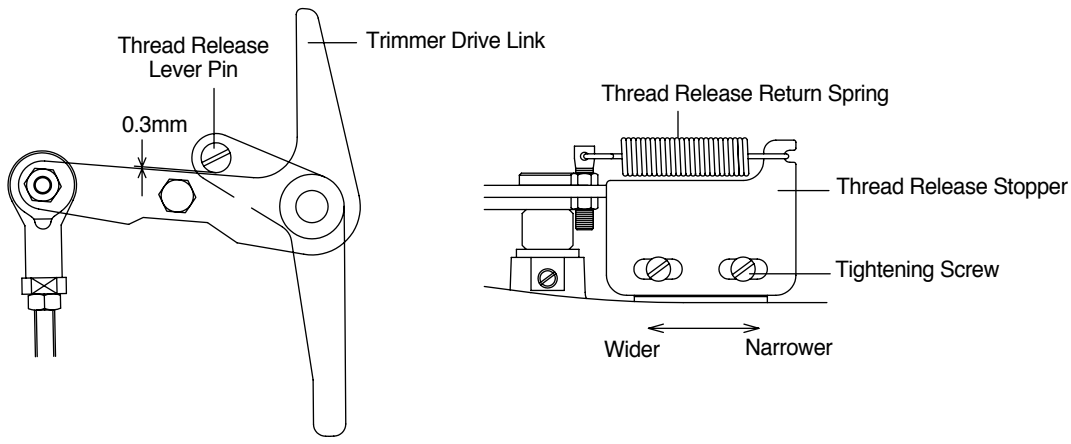


Caution

If the notch is not properly positioned, the remaining thread might be too short or irregular. When the sewing begins, the thread might exit from the needle.

5.6.2) Thread Release Stopper Position Setting

- Disassemble the thread release return spring.
- Loosen the tightening screw for the thread release stopper and adjust the distance between the trimmer driving link and the thread release lever pin to be 0.3mm. If the thread release stopper is pushed to the right side, the distance between the trimmer driving link and the thread release lever pin grows narrower. If it is pushed to the left side, the distance between them grows wider.
- Assemble the thread release return spring.



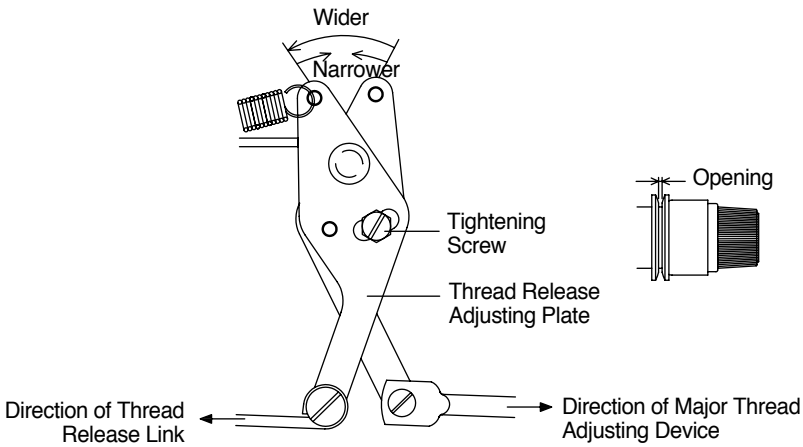
Caution

To prevent safety accidents, please use proper tools to disassemble or assemble the thread release return spring.

5.6.3) Adjustment of Thread Guide Disk Opening

- Loosen the tightening screw for the thread release adjustment plate.
- Conduct thread trimming to make the thread guide disk open.
- Adjust the guide disk to be open 0.6~0.8mm for general materials and 0.8~1mm for heavy materials respectively.
  When the angle between the thread release adjustment plates is bigger, the opening of the thread guide disk increases.
  When the angle between the plates is narrower, the opening decreases.
- When the adjustment is completed, fasten the tightening screws.

Caution	If the opening is not proper, the remaining thread might be too short or irregular. The thread guide disk might not be completely closed.

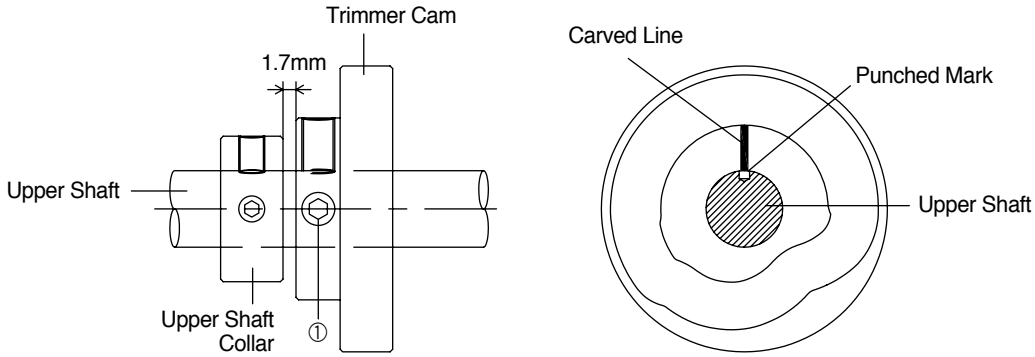


5.7) Adjustment of Trimming-related Parts

5.7.1) Trimmer Cam Position Setting

Set the distance between the upper shaft collar and the trimming cam at 1.7mm. Move the trimming cam to make the carved line of the trimming cam touch the punched mark of the upper shaft and fasten the tightening screw.

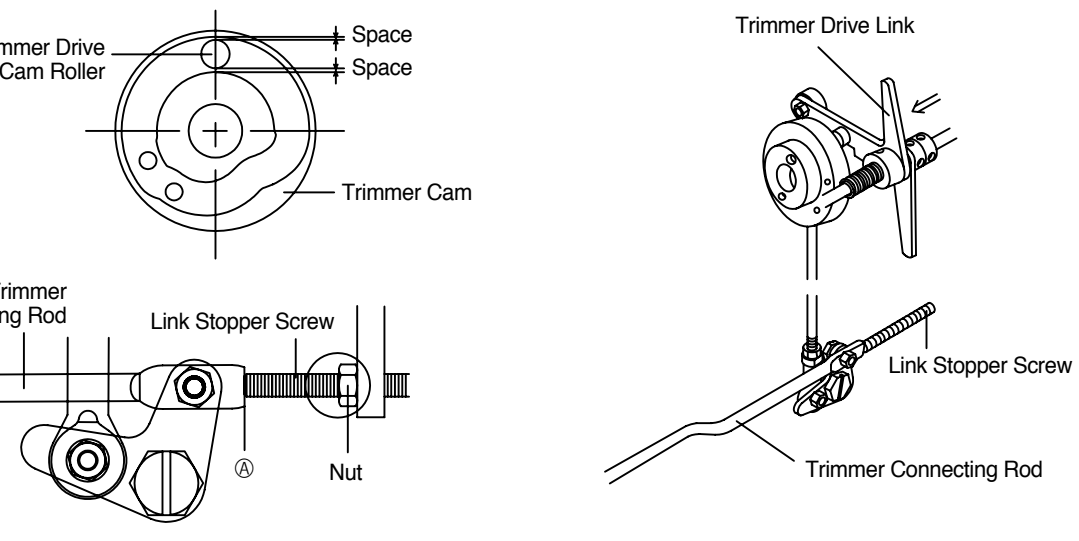
Caution	If the trimming cam is not properly positioned, the trimmer is not properly operated nor the parts might get stuck to each other.



5.7.2) Adjustment of Link Stopper Screw

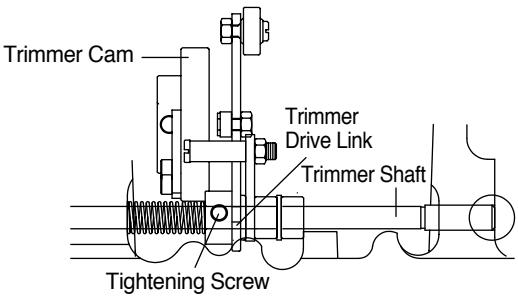
1) With the needle bar at the lowest position, push the trimmer driving link toward the trimming cam around the moving section of the trimmer cam to check whether there is space between the trimmer cam roller and the ends of the trimmer cam.
2) While the trimmer cam roller is inserted into the moving section of the trimmer cam, adjust the end of the link stopper screw to meet the section (A) of the trimmer connecting rod, and fasten the nut.

Caution	1) If there is not enough space between the trimmer roller and the both ends of the trimmer cam, the trimmer might not be properly operating or upon the beginning or end of sewing, parts might get stuck with each other. 2) If the location of the link stopper screw is not proper, it takes longer time to return to the original position after trimming and the first stitch' s sewing condition might not be good.



5.7.3) Trimmer Shaft Position Setting

1) Loosen the tightening screw for the trimmer driving link and the tightening screw for the trimmer shaft collar.
2) Make the cross-section of the trimmer shaft touch the A section of the arm.
3) Fasten the tightening screw.

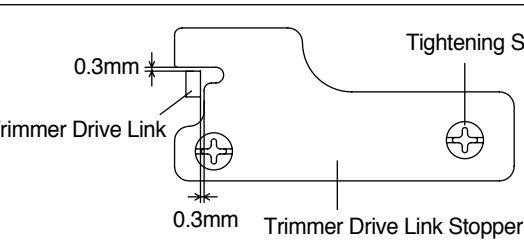


Caution

If the position is not properly set, the trimmer operation might be faulty or the parts might be stuck with each other.

5.7.4) Link Stopper Position Setting

1) While the trimmer is not in operation, loosen the tightening screw for the trimmer driving link stopper and set the distance between the trimmer driving link and the trimmer driving link stopper's notch to be 0.3mm.

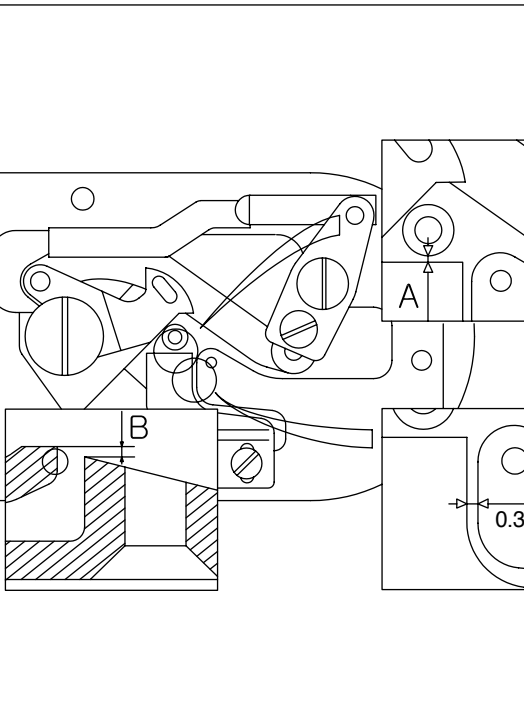


Caution

If the position is not properly set, the trimmer operation might be faulty or the parts might be stuck with each other.

5.7.5) Adjustment of Moving and Fixed Blades

1) Adjustment for H type machine
   For the adjustment of the needle hole guide and the distance between A and B of the moving blade, see the table below.
   - Adjustment of the blade distance "A"
     Loosen the fixed blade screw and adjust the space of the fixed blade
   - Adjustment of height gap "B"
     If the heights of the fixed blade and the needle hole guide are not identical, bend the moving blade to adjust the heights.
   - Adjustment of distance between needle plate and fixed blade
     Adjust the distance between the needle plate and the fixed blade to be 0.3~0.5mm.



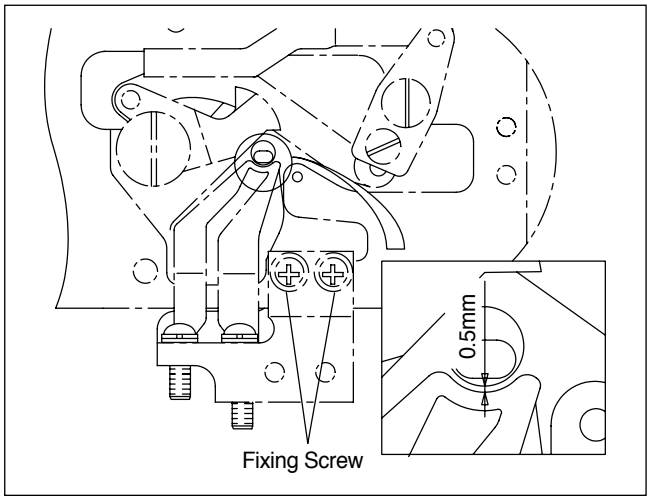
	H Type
Size of A	0.8~1mm
Size of B	0.25~0.35mm

Caution

If the size of A is smaller or the size of B is larger, either upper thread or lower thread would be short.

2) Adjustment for HC type

- Adjustment of distance between blades
  Loosen the fixing screw for the fixed blade and adjust the fixed blade base to set the distance between the needle plate cover and the fixed blade to be 0.5mm.

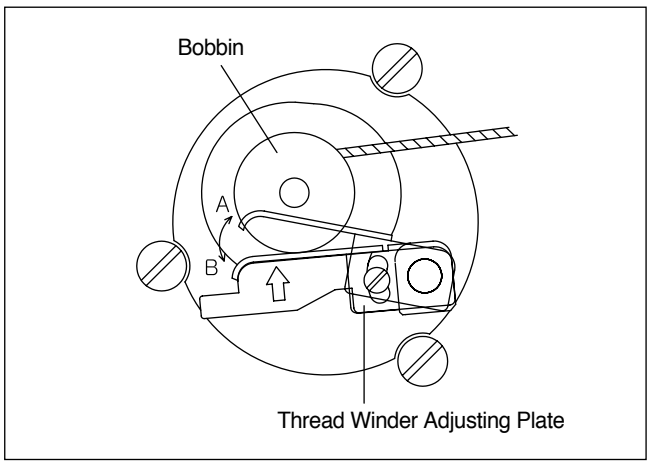


Caution

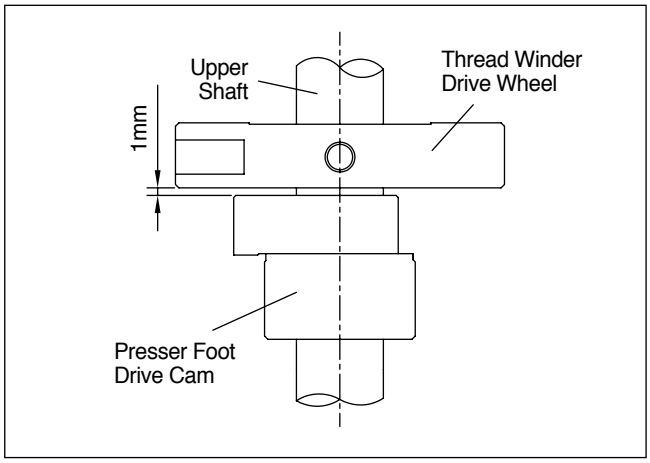
1. After completing the distance adjustment, use the testing device to test whether there is an electric short circuit among the fixed blade, the needle plate cover, and the needle plate (If there is a short circuit, it may cause bad trimming and machine breakdown).
2. The tightening pressure of the fixing screw① should be set at 9.8~14.7N/cm (10~15kgf/cm).

5.8) Adjustment of Bobbin Thread Volume

To adjust the thread volume wound on the bobbin, use the initial position of the thread winder adjusting plate. If lots of thread is wound, loosen the tightening screw on the thread winder adjusting plate and turn it to the A direction. If the thread volume wound on the bobbin is small, turn the screw in the B direction.

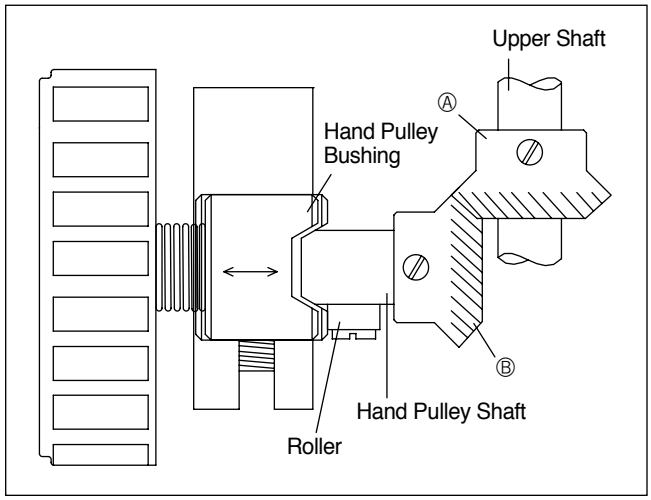


- Adjust the thread winder wheel to be 1mm away from the presser foot driving cam and fasten the tightening screw.



5.9) Adjustment of Hand Pulley Device

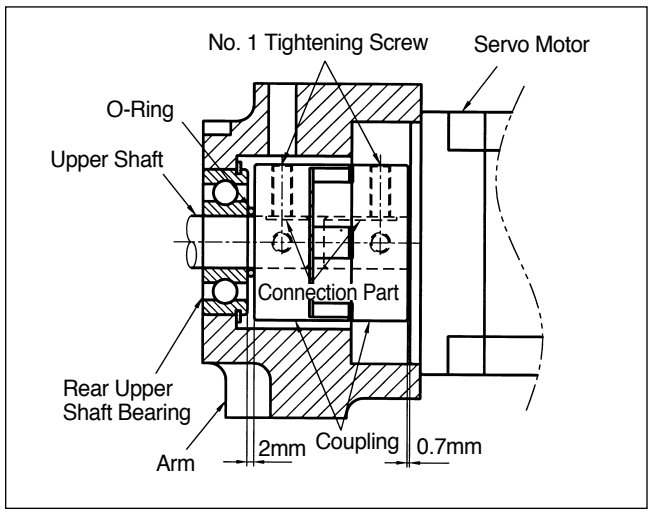
1) Make the hand pulley gearⒷ touch the end of the hand pulley shaft, and fasten the tightening screw.
2) Secure proper clearance between the gearⒶ, which is connected to the upper shaft, and the gearⒷ, which is connected to the hand pulley shaft, and fasten the tightening screw.
3) When the roller touches the end of the hand pulley bushing, to reduce the backlash between gearⒶ and gear Ⓑ, make adjustment by moving the bushing left or right.



5.10) Assembly and Adjustment of Direct Drive Motor

5.10.1) Assembly of Coupling

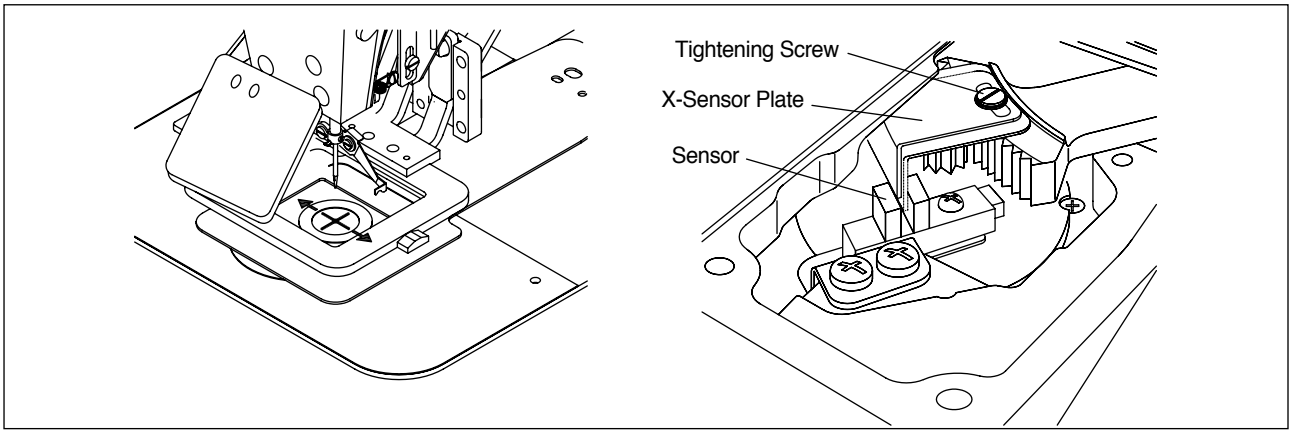
1) Assembly of Servo Motor Coupling
When installing the coupling on the servo motor, accurately locate the tightening screws for the coupling on the connection parts, adjust the distance between the coupling and the servo motor to be 0.7mm, and then fasten the screws.
2) Assembly of Coupling on Upper Shaft
When assembling the coupling to the upper shaft, accurately locate the tightening screw for the coupling on the upper shaft connection parts, set the distance between the bearing o-ring and the coupling at 2mm, and fasten the coupling tightening screw.



5.11) X, Y Origin Setting

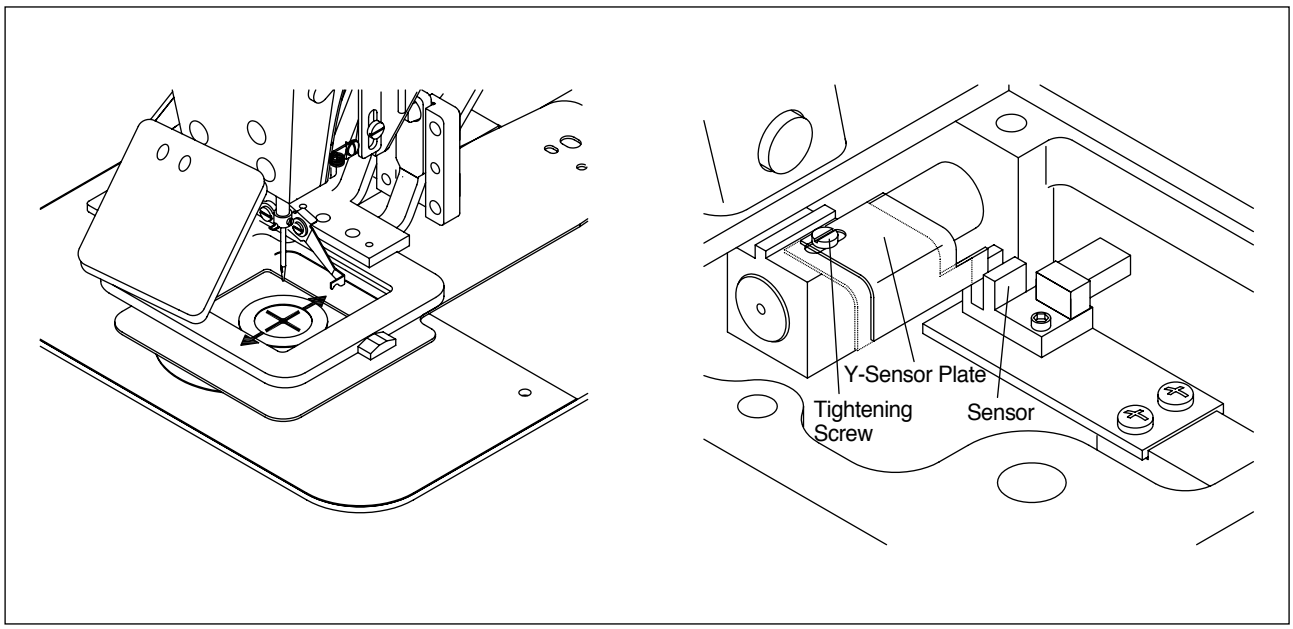
5.11.1) X Origin Setting

1) Disassemble the bed cover(left).
2) Move the feed bracket to place the center of the upper feed plate at the center in the X-axis direction.
3) Loosen the tightening screw for the X-sensor plate, move the end of the X-sensor plate to the center of the sensor, and then fasten the tightening screw with a driver.



5.11.2) Y Origin Setting

1) Disassemble the bed cover(right).
2) Set the distance between the Y-feed arm and the bed side at 24mm.
3) Move the upper feed plate to the center in the Y-axis direction and make sure to maintain the distance at 24mm.
4) Loosen the tightening screw for the Y-sensor plate. Move the end of the Y-sensor plate to the center of the sensor and fasten the tightening screw with a spanner.



5.12) Oil Supply

Caution	1) During machine check or maintenance, please observe the safety rules on machine and electricity. 2) Make sure that the power is “off” before maintenance work begins.

5.12.1) Regular Check List

1) For the parts which need regular check, conduct cleaning and lubrication and add grease to maintain high machine performance.
2) Test the tension of each driving belt.
3) Without regular machine check, the following problems might result:
   - Abnormal abrasion of the moving parts in a wet condition due to the insufficient oil supply and grease injection
   - Abnormal operation due to dust or foreign materials gathered at the moving parts

Caution	1) If machine damage or mal-operation occurs due to the failure to clean and lubricate the machine through regular checking, SunStar will not be held liable. 2) Adjust the cleaning cycle depending on the use conditions and environment.

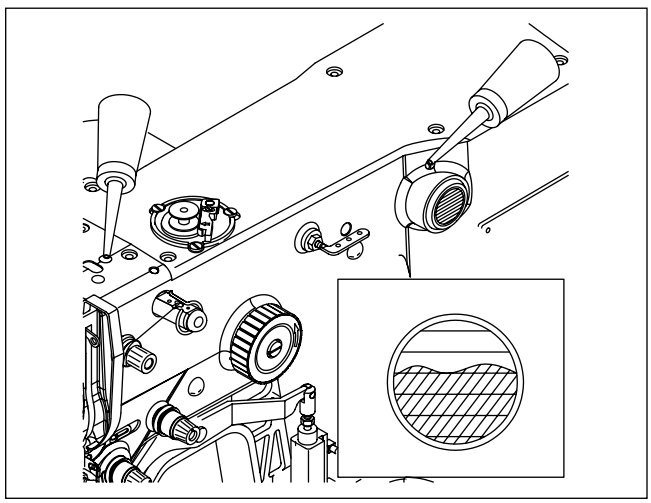
5.12.2) Oil Supply

1) Type of Lubricant

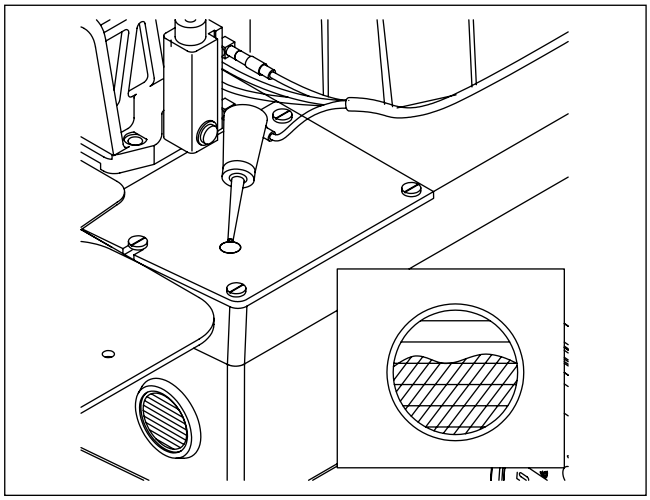
No.	Type of Lubricant	Parts Applied
1	S/M Oil	Arm, Bed, Hook
2	Silicon Oil	Silicon Oil Supply Tank

5.12.3) Oil Supplying Method

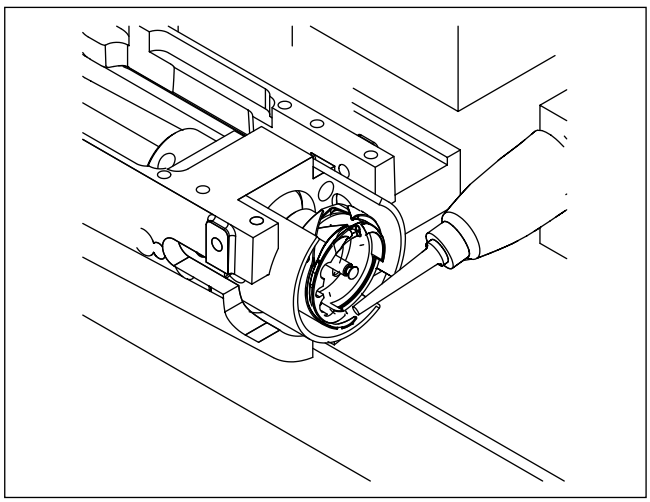
1) Arm
   - Check the remaining oil volume at the oil tank installed at the arm before supplying oil.
   - Fill up the oil tank through the oil outlet at the upper arm.



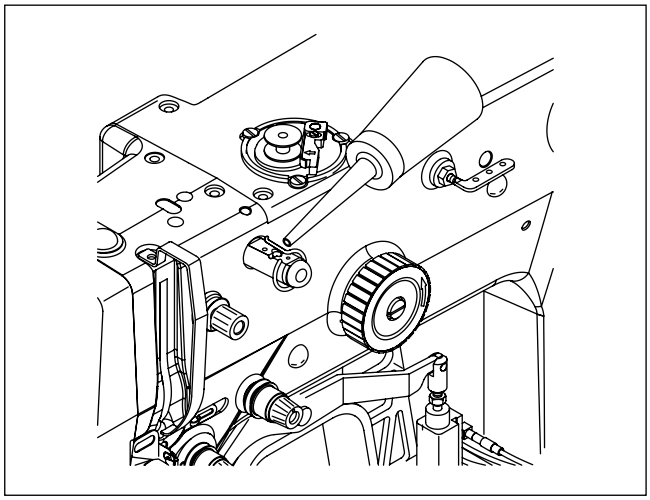
2) Bed
   - Remove the rubber cap from the oil outlet on the table and supply oil. When the oil supply is completed, put back the rubber cap to close the outlet.



3) Hook
   - Remove the bobbin case and administer oil around the hook to the extent that the area becomes wet with oil.



4) Silicon Oil Tank
   - Supply silicon oil to the silicon oil tank installed on the right side of the arm.



5.13) Cleaning

5.13.1) Cleaning Cycle and Method

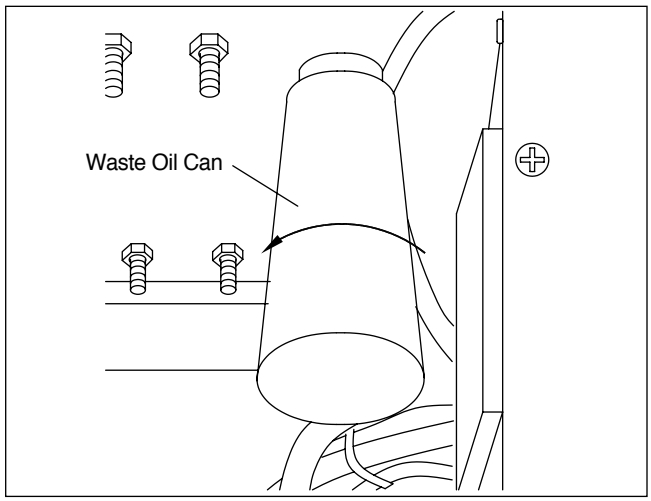
Caution

1) Make sure to turn “off” the machine power before conducting cleaning.
2) Assemble the parts which are disassembled for cleaning.

No.	Cleaning Area	Cleaning Frequency
1	Around hook	Everyday
2	Thread take-up lever / Thread tension adjusting device	Once a week
3	Around the moving and fixed blades. Use air to clean the moving and fixed blades under the needle plate.	Three times a week

5.14) Handling of Waste Oil

When the waste oil can attached to the rear side of the table is filled to the full, separate and empty the can.



Caution

1) When separating the waste oil can, take caution not to drop it to the floor.
2) Just in case for dropping the waste oil can to the floor, place cloth, paper or oil dish on the floor before separating the waste oil can.

6

Troubleshooting

6.1) Machine Part

No	Trouble	Cause	Corrective Action
1	Faulty machine operation	Excessive relaxation of the belt tension or the damage to the belt	Adjust the belt tension and replace the belt
		Power cutoff or the cut of the circuit fuse	Check whether the main shaft motor drive fuse is cut and replace it if so.
		Separation of feed bracket from X or Y limit	Properly place the feed bracket at the normal position (within the scope of the limit switch)
2	Improper stop position	Loose main driving belt	Adjust the belt tension
		Wrong synchro location	Adjust the synchro location
3	Needle break	Damage to needle (crooked needle, scratch on needle hole or groove, abrasion or deformation of the needle tip)	Replace the needle
		Wrong needle installation	Properly install the needle
		Contact between needle and hook	Adjust the distance between needle and hook properly
4	Thread break	Wrong thread placement	
		Wrong needle installation (needle height, needle direction, etc.)	Insert the needle again
		Damaged needle (crooked needle, scratch on needle hole or groove, abrasion or deformation of the needle tip)	Replace the needle
		Too strong upper and lower thread tension	Adjust the tension
		Excessive thread take-up lever spring' s tension and moving scope	Adjust the thread take-up lever spring tension and moving scope
5	Stitch skip	Crooked needle used	Replace the needle
		Improper needle for used thread	Replace the needle
		Bad needle fitting condition	Refit the needle
		Improper needle and timing	Adjust the needle and hook timing
		Improper groove, and wide gap between hook points	Adjust the needle and hook timing
		Excessive thread take-up lever spring's tension and moving scope	Adjust the thread take-up lever spring tension and moving scope

No	Trouble	Cause	Corrective Action
6	Bad thread tightening condition	Weak upper thread tension	Adjust the upper thread tension
		Weak lower thread tension	Adjust the lower thread tension
		Improper needle and hook timing	Adjust the needle and hook timing
		Relaxed crossing tension of the moving and fixed blades	Adjust the fixed blade tension
7	Missing thread trimming	Scratch or abrasion on the moving and fixed blades	Replace the moving and fixed blades
		Wrong trimmer cam location	Readjust the location of the trimmer cam