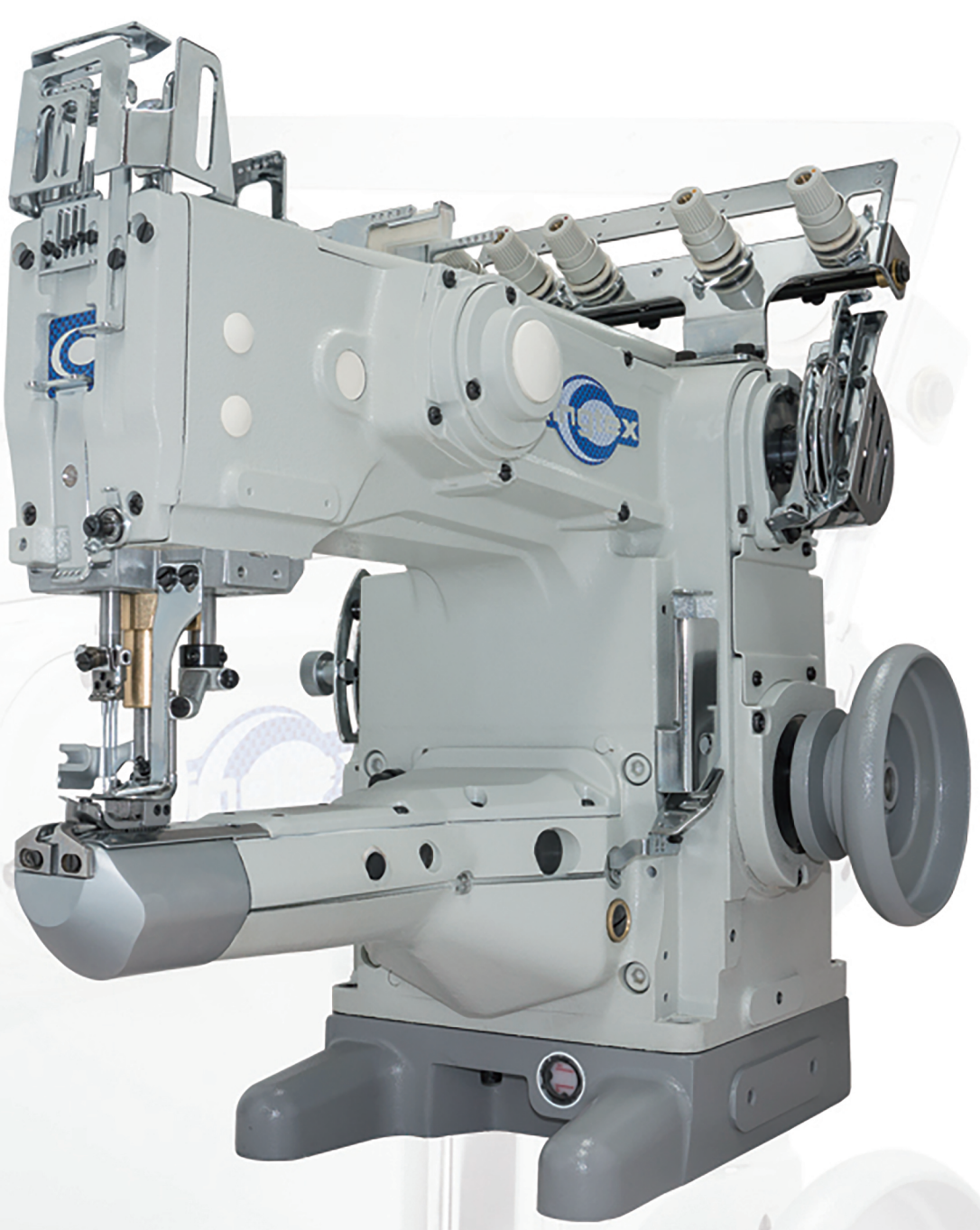
VX SERIES

寶獅牌工業用縫紉機 INDUSTRIAL SEWING MACHINE

MODEL

VX1500



HIGH SPEED FEED-UP-ARM INTERLOCK MACHINE

User Manual

精機機械廠股份有限公司 CHING CHI MACHINE CO., LTD
http://www.kingtexsewing.com.tw

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Table of Contents

Safety Intructions ---- i - iv

1. Names of parts ---- 1

2. Installation ---- 2
- 2.1 Installing on a table ---- 2
  - 2.1.1 Table top Installation(standard Installation) ---- 2
- 2.2 Motor and belt ---- 3
  - 2.2.1 Sewing speed and pulley rotational direction ---- 3
  - 2.2.2 Clutch motor ---- 3
  - 2.2.3 Servomotor ---- 4
  - 2.2.4 Belt ---- 4
- 2.3 Installation of synchronizer ---- 4
- 2.4 Hanging the belt ---- 5
- 2.5 Belt cover installation ---- 6
- 2.6 Thread tension unit installation ---- 7
- 2.7 Eye guard and finger guard installation ---- 7
- 2.8 Presser lifter pedal installation ---- 8
- 2.9 Supplementary cover installation ---- 9

3. Lubrication and oil ---- 10
- 3.1 Lubrication oil ---- 10
- 3.2 Lubrication ---- 10
  - 3.2.1 When using a sewing machine for the first time ---- 10
  - 3.2.2 Checking oil level ---- 10

4. Proper operation ---- 11
- 4.1 Removing and resetting the cylinder front cover ---- 11
  - How to remove ---- 11
  - How to reset ---- 11
- 4.2 Needle system ---- 11
- 4.3 Needle installation ---- 11
- 4.4 Threading ---- 12
- 4.5 Tension adjustement at the tension unit ---- 13
- 4.6 Presser foot pressure adjustement ---- 13
- 4.7 Differential feed adjustement ---- 13
- 4.8 Sistch lenght adjustement ---- 14
  - 4.8.1 Changing sistch lenght ---- 14
- 4.9 SP device ---- 15
  - 4.9.1 Checks before use ---- 15
- 4.10 Using the fabric edge guides ---- 16
  - 4.10.1 For hemming ---- 16
  - 4.10.2 For tip over covering seam ---- 16
  - 4.10.3 For covering seam ---- 16

5. At the end of work ---- 17

6. Checks and maintenance ---- 18
- 6.1 Needle thread tension adjustement ---- 18
  - 6.1.1 Needle thread eyelet(front) adjustement ---- 18
  - 6.1.2 Needle thread strike-off pin adjustement ---- 18
  - 6.1.3 Holder adjustement ---- 18

Table of Contents

6.2 Top cover thread tension adjustement ---- 19
6.3 Looper thread tension adjustement ---- 19
6.3.1 Thread take-up eyelet adjustement ---- 19
6.3.2 Looper thread take-up adjustement ---- 19
6.4 Needle and spreader adjustement ---- 20
6.4.1 Spreader adjustement ---- 20
6.4.2 Top cover thread guide adjustement ---- 21
6.4.3 Top cover thread eyelet adjustement ---- 21
6.5 Needle and looper adjustement ---- 22
6.5.1 Looper's distance adjustement ---- 22
6.5.2 Looper angle and height adjustement ---- 22
6.5.3 Looper front-and-rear position adjustement ---- 22
6.5.4 Needle height adjustement ---- 23
6.6 Needle guard(rear) adjustement ---- 24
6.6.1 Needle guard(rear) height adjustement ---- 24
6.6.2 Needle guard(rear) front-and-rear position adjustement ---- 24
6.7 Needle guard(front) adjustement ---- 24
6.8 Feed dog height adjustement ---- 25
6.8.1 Standard position ---- 25
6.8.2 Adjustement ---- 25
6.9 Presser foot position adjustement ---- 25
6.10 Removing and resetting presser foot ---- 26
6.10.1 How to remove ---- 26
6.10.2 How to reset ---- 26
6.11 Changing the oil ---- 27
6.11.1 Oil changing interval ---- 27
6.11.2 How to change ---- 27
6.12 Oil filter check and replacament ---- 28
6.12.1 How to check and replace ---- 28

7. Troubleshooting ---- 29

8. Specifications ---- 30

Remarks

This manual has been prepared primarily for engi-neers, but information marked with should be read by operators as well to ensure the machine is properly used.

Illustrations in this manual bear a number under the lower left-hand comer. these numbers also appear in the body of this manual, therefore, as necessary, refer to the indicated illustration.

Note

This product is subject to change without prior notice. Due to such event, the contents of this manual may not match the product in some regards. Every effort has gone into making this manual, nevertheless should you discover any mistakes or missing information, please note that it may not always be possible for Kingtex to correct those errors immediately.

Safety Intructions

1. To ensure safe use

Always observe the follwing instructions to ensure the safe use of the industrial sewing machines and devices.

1-1 Application and purpose

The sewing machines is designed to improve productivity in the sewing industry and must not be used for other applications and purposes. Do not use this sewing machine until it can be confirmed that safety measures for the drive units have been taken.

1-2 Before use

Read all instruction manuals thoroughly before starting the use of this machine and follow them.
Also, read the instruction manual for the installed drive unit.

1-3 Working enviroment

DO NOT WORK IN THE FOLLOWING ENVIRONMENTS:

- **Place where atmosphere temperature and humidity give a bad influence the performance of sewing machines.**
- **Outdoors and place were the sewing machines are exposed to sunlight directly.**
- **Atmosphere containing dust, corrosive gass or flammable gases.**
- **Place where voltage fluctuation exceeds ±10% of the rated voltage.**
- **Place where power capacity necessary for the used motor specifications cannot be secured.**
- **Place where strong electriv or magnetic fields are generated such as near large-output high frequency transmitters or high frequency welding machines.**

1-4 Unpacking and transportation

(1) **Unpack from the top.**
(2) **Never hold the parts near the needle or threading parts when removing the sewing machine head from the buffer of box.**
(3) **When carrying the sewing machine head, have an assistant.**
(4) **Pay attention not to get excessive impact or shock when moving the sewing machine head with a pushcart.**

2. Installation and preparation

2-1 Instruction and training

Operators and workers, who supervise, repair or maintain the machine head and machine unit, are required to have the adequate knowledge and operation skills to do the job safely. In order to establish such necessary conditions, it needs for the employer to plan and enforce the safety education and training to those workers.

2-2 Sewing table and motor

(1) **Prepare a machine table that has enough sreenght to withstand the weight of the sewing head and any reaction while operationg.**
(2) **Maintain a comfortable working environment with considering the lighting and the arrangement of sewing machine so that the operators can work smoothly.**
(3) **When installing the control box and the related parts on the sewing machine, take care about the posture of the worker.**
(4) **Install the drive unit correctly according to the istruction manual.**

2-3 Wiring

(1) **Never connect the plug for power supply until assembly is finished.**
(2) **Fix the connectors securely to the sewing machine head, motor, and electric apparatus.**
(3) **Do not apply excessive force to connection cords.**
(4) **Connect the cords away from the driving parts.**
(5) **Place the ground wire securely to the designated position on the machine head.**

2-4 Before operation

(1) **Take care not to attach lubricant, silicone oil, and grease on the eyes or skin.**
Keep them away from children.
(2) **Be sure to fill or drop lubrication oil before operating the sewing machine.**
Use the Kingtex oil as specified.
(3) **Never put your hand under the needle or near the moving parts of the machine when turning on power supply switch.**
(4) **When operating a new sewing machine, make sure the rotating direction of pulley agrees with the rotating-direction mark.**

2-5 During operation

(1) Be sure to operate the sewing machine with the safeguards such as belt cover, finger guard, and eye guard.
(2) Never place the finger, hair or objects under the needle or close the moving parts while operating the sewing machine.
(3) Be sure to turn off the power supply switch when threading or replacing the needles.
(4) Never place your hands close to the knives when operating the sewing machine with the trimming devices.
(5) Be sure to turn off the power supply switch when treminating the sewing work or leaving the sewing machine.
(6) If the sewing machine malfunctions, abnormal sound or smell something unusual while operating, be sure to turn off the power supply switch.

2-6 Removal

(1) Turn off the power supply switch if removed or replaced any parts or during adjustment of sewing machine.
(2) Do not pull the cord when removing the plug. Be sure to hold the plug itself.
(3) A high voltage is applied inside the control box. Turn off the power supply switch and wait more than 5 minutes before opening the cover.

3. Maintenance, inspection, and repair

(1) Follow the instruction manuals for maintenance, inspection, and repair.
(2) Entrust the maintenance, inspection, and repair to specially trained personnel.
(3) Be sure to turn off the power supply switch and make sure that the sewing machine and motor completely stop before the maintenance, inspection, and repair. (If using a clutch motor, take care that the motor keeps turning for a while even after turning off the power supply switch.)
(4) Do not modify the sewing machine by the customer's judgment.
(5) Be sure to use original replacement parts for repairs or maintenance.

Safety Intructions

4. Caution sights and alert pictorial markings

This instruction manual contains the following caution signs and alert pictorial markings to prevent you form injuring yourself or the sewing machine from being damaged.
Please follow the instructions.

4-1 Meanings of caution signs

WARNING indicates potentially hazardous situations which, if not heeded, could reault in death or serious injury to you and others.

4-2 Alert pictorial markings

This mark indicates the warning which, if not heeded, could result in death or serious injury.

This mark indicates the caution for high temperature.

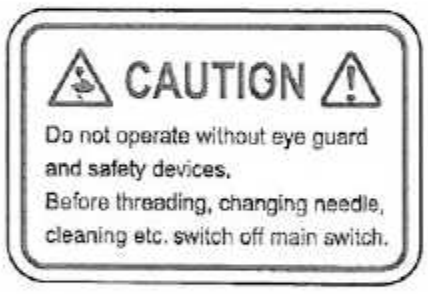
This mark indicates the warning which, if not heeded, could result in death or serious injury.

High-voltage applies in the control box. This label indicates that electric shock may be caused.

This mark indicates the warning which, if not grounded, the machine or device could malfunction and could result in personal injury.

5. Warning labels on sewing machines

In order to prevent the customers from injury themself or to prevent the sewing machine from been damaged, this instruction manual indicates the warning words and warning logos.



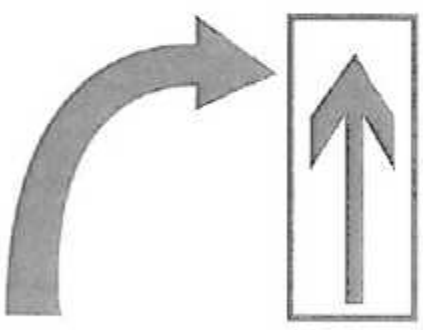
This lable indicates that removal of the safeguards and works except for sewing performance while the power supply switch is on are prohibited. (For details, see the next page.)

High-voltage applies in the control box. This label indicates that electric shock may be caused.

This lable is affixed on the safeguards. Considering the operation, it is not affixed on the finger guard and eye guard. Be sure to operate with the finger guard and eye guard in position.

Stepping motor and solenoid may overheat if used continuously. To prevent a burn, take care not to touch.

If not connected earth line, staic electricity may be generated and inflict injury on person. In addition, the malfunction of electric system may cause injury to person.

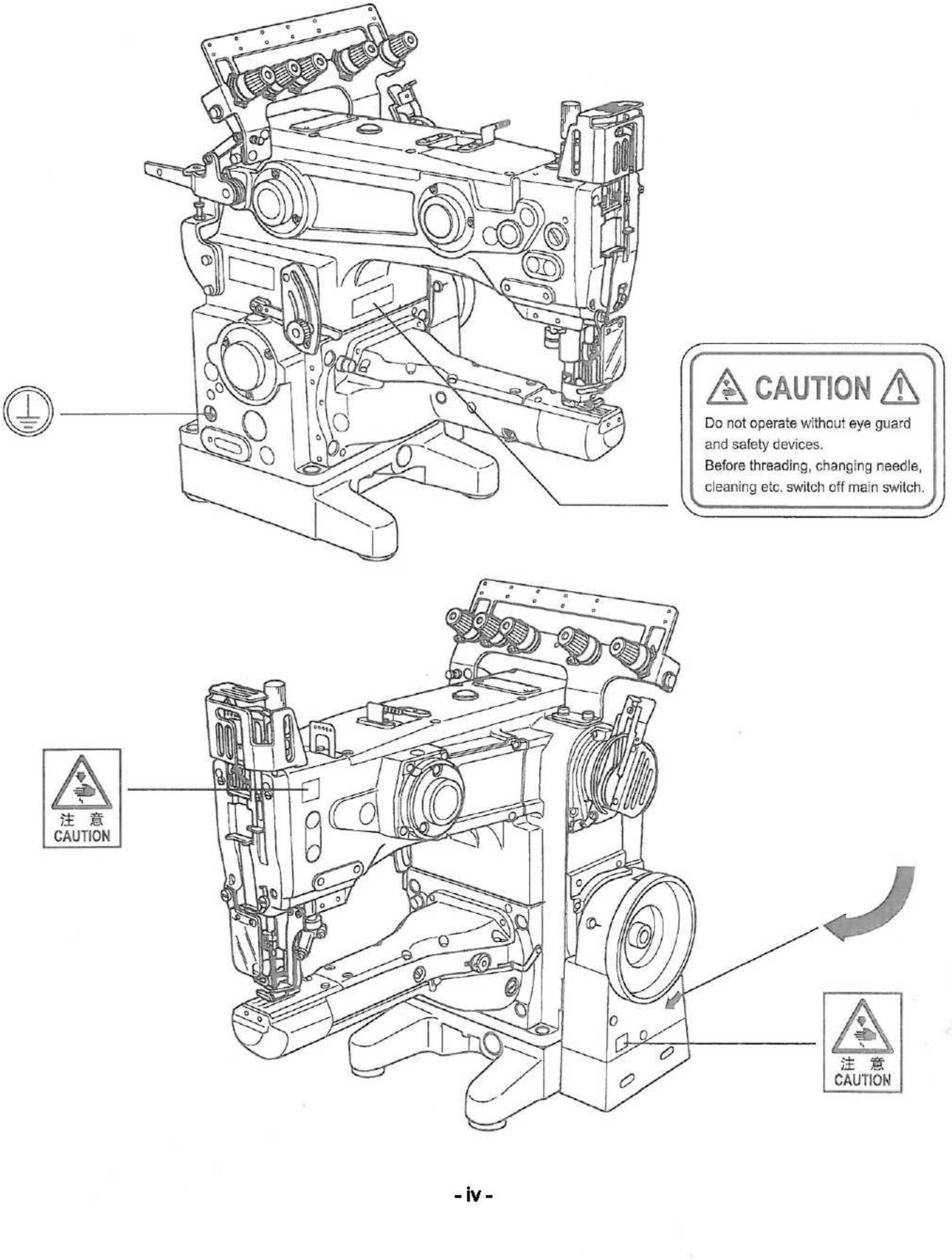


Check the rotating direction of machine pulley agrees with 'ROTATING-DIRECTION SYMBOL'.

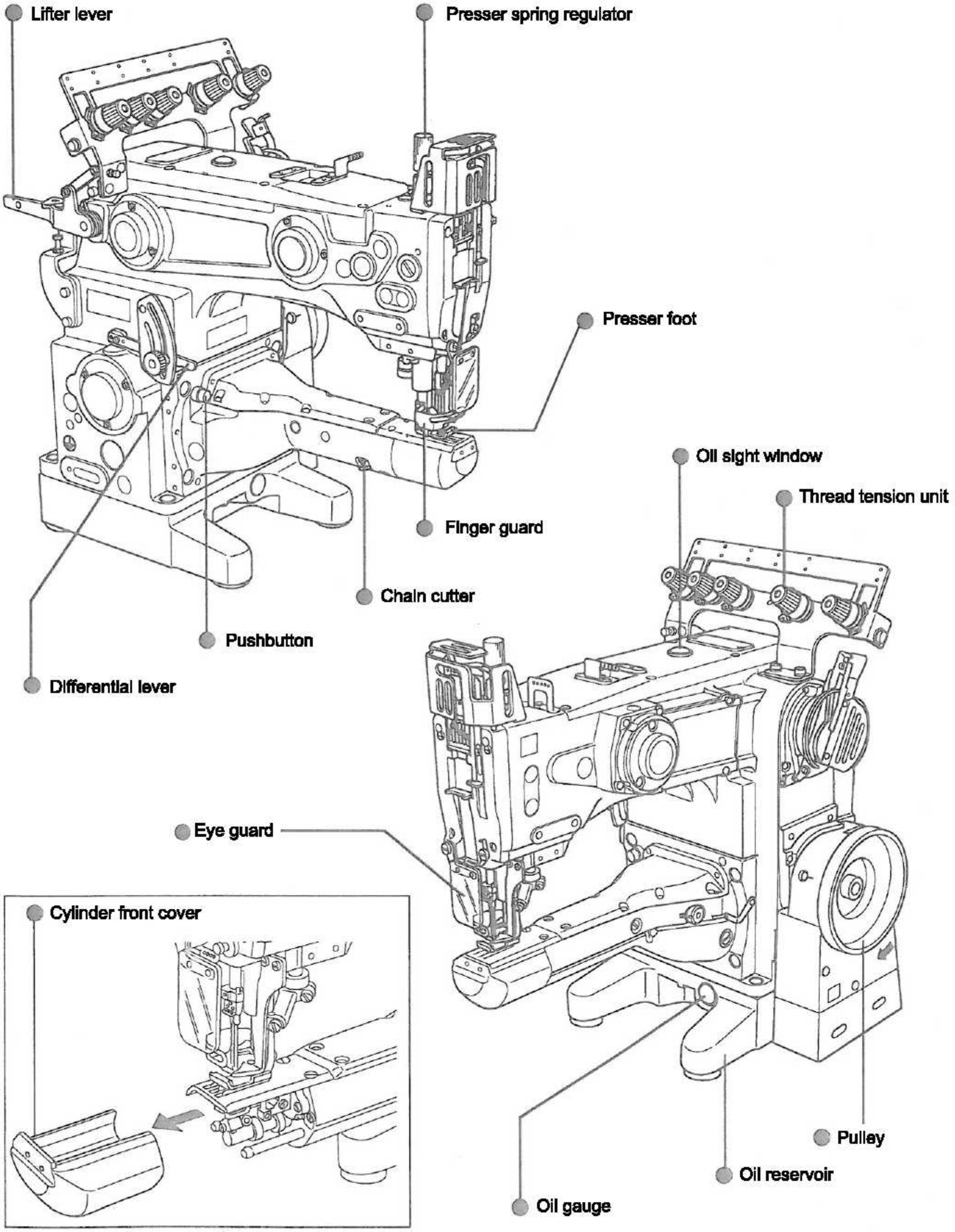
6. Location of safety labels

Safety lables are placed adjacent to potential hazards.

Keep these labels clean and easily readable at all times; should a label become damaged or lost, a replacement should be ordered.



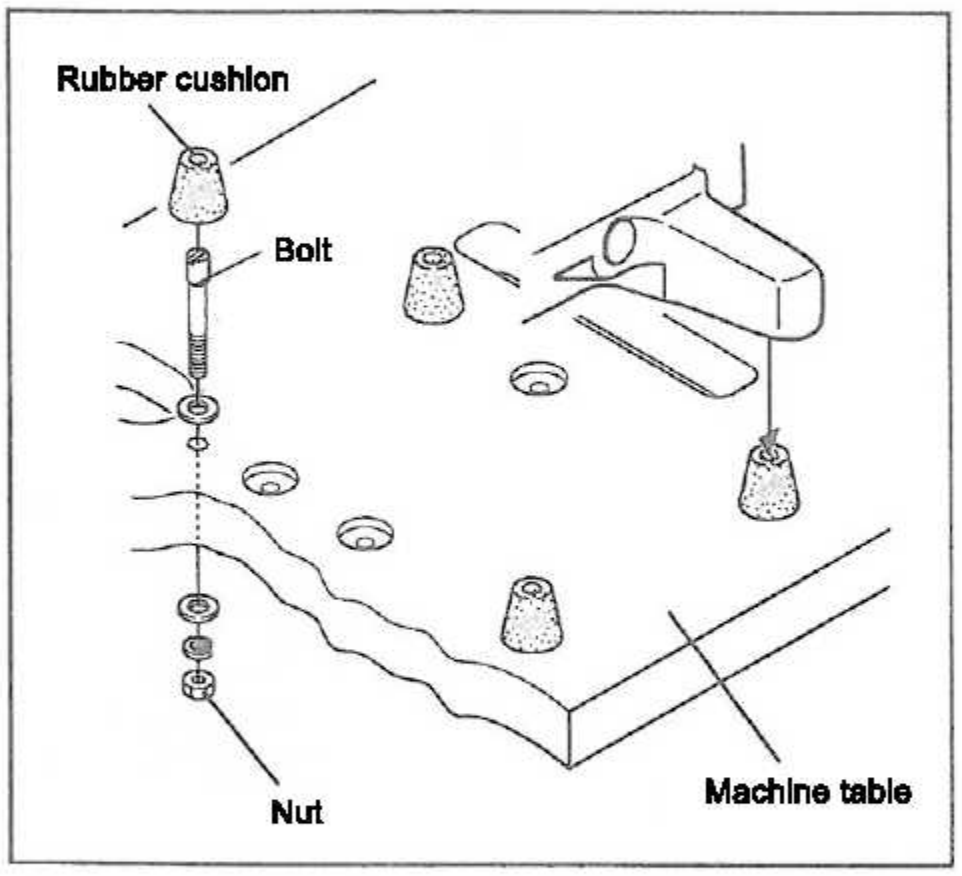
1. Names of parts



2. Installation

⚠ CAUTION

Do not plug motor's power cable into an electrical outlet until all installation work has been completed. If power is activated prematurely, you may be entangled in mechanisms and injured.



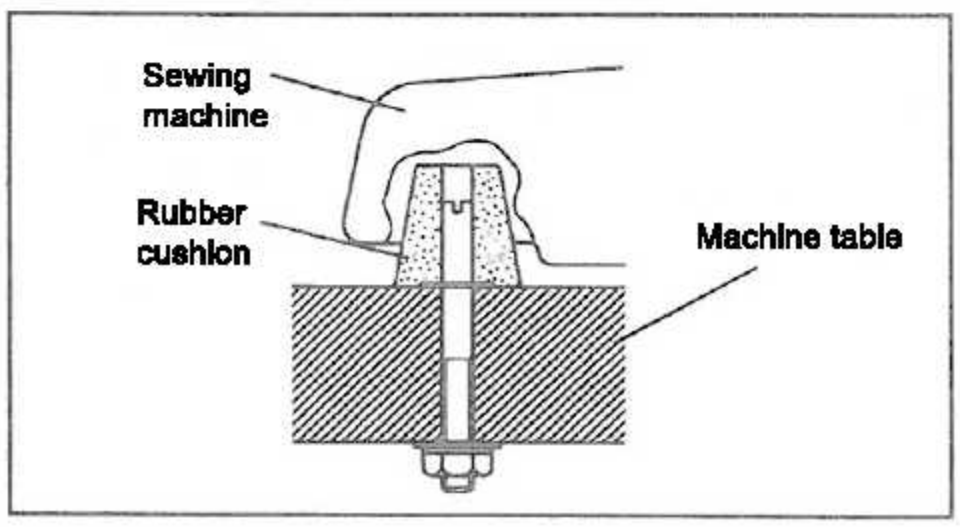
2.1 Installation on a table

⚠ CAUTION

The sewing machine weighs 42 kg or more. Work in twos or more when unpacking, carrying and installing the machine.

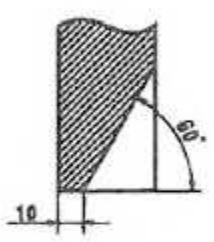
2.1.1 Table top installation(Standard installation)

Install the sewing machine correctly as shown in Figs.
(1) Attch the bolts and nuts to the machine table.
(2) Cover the bolts with the rubber cushions.
(3) Set the sewing machine over the rubber cushions.

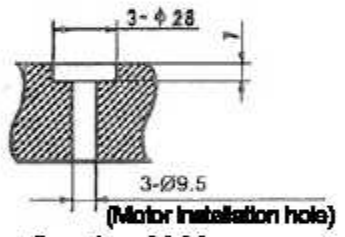


Presser lifter shaft support installation location

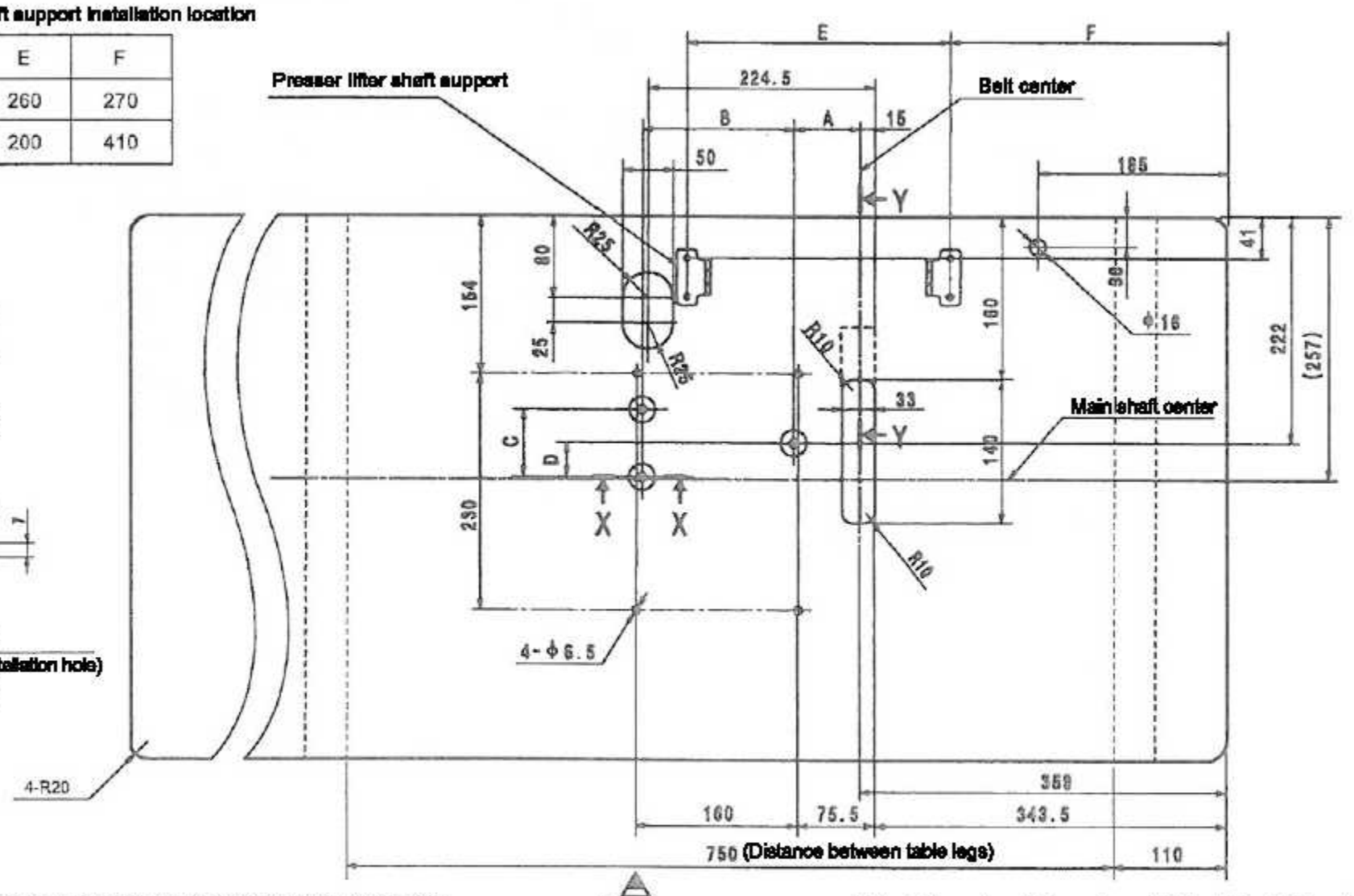
Pedal position	E	F
Right	260	270
Left	200	410



Section Y-Y



Section X-X



※ For dimensions A, B, C and D, see instruction manual of the motor.

Note:Table external dimensions: 1200 x 630 x 400(mm)

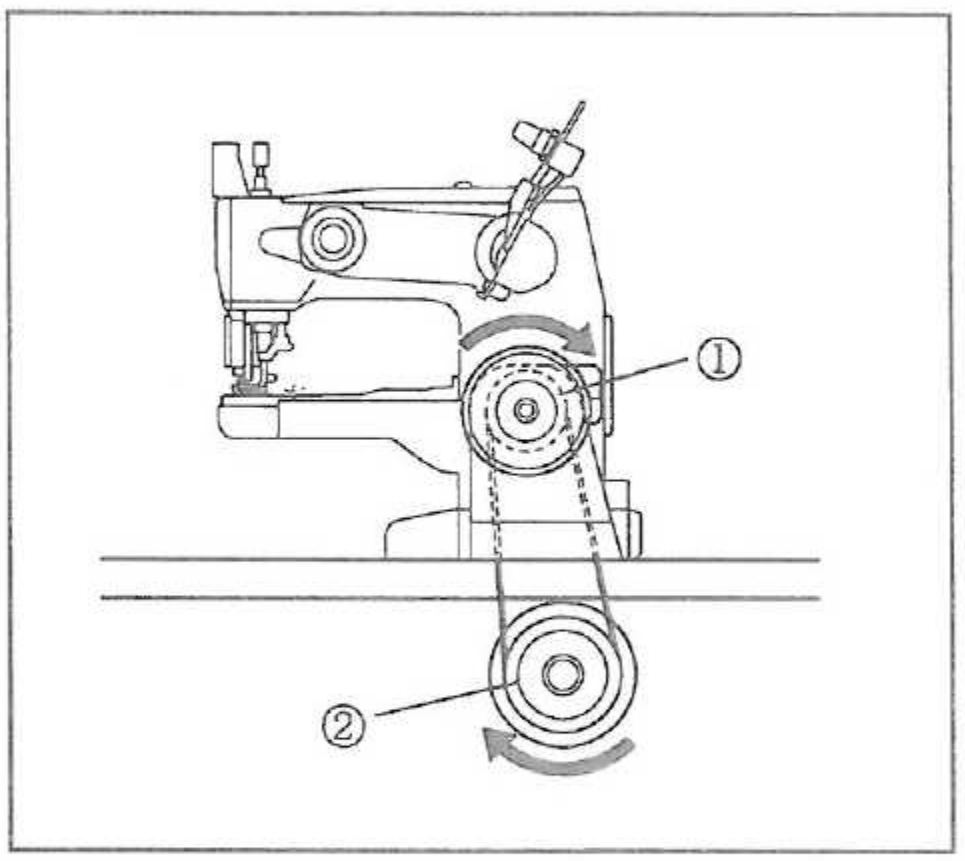
2. Installation

2.2 Motor and belt

2.2.1 Sewing speed and pulley rotational direction

The maximum speed of this sewing machine is 4500 rpm (in intermittent operation). When using it for the first time, using it at anywhere from 15% to 20% lower that the maximum speed for the first 200 hours (approx. 1 month) keeps the machine in good condition and enables longer lasing use.

Both the motor pulley ② and the machine pulley ① rotate in the clockwise direction.



⚠ CAUTION

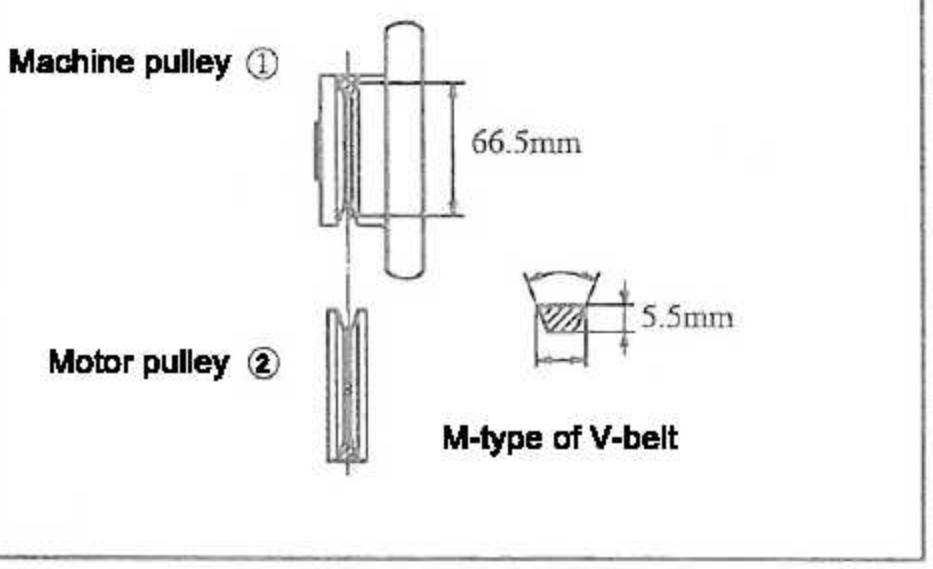
If the pulleys rotate backwards, oil is not being properly supplied to parts resulting in sewing machine break-down.

2.2.2 Clutch motor

See the instruction manual of the motor you are using.

The clutch motor should be installed in a position where the center of the motor pulley ② and the center of the machine pulley ① align with one another when the pedal is depressed and the motor pulley ② moves to the left.

Commercially available pulleys have outer diameters incremented every 5 mm, therefore pulleys are specified by commercial sizes.



⚠ CAUTION

Use of inappropriate motor pulley may cause the sewing machine to exceed the maximum speed whereby resulting in breakdown.

Table 1

Motor pully O.D. (mm)	Sewing speed(rpm)		Belt size
	50Hz	60Hz	
65		3100	35
70		3350	35
75	3000	3600	36
80	3200	3850	36
85	3400		36
90	3600		37
95	3800		37
100	4000		37

Numerical figures are given for a 3-phase, 2-pole, 400 W (1/2 HP) clutch motor.

2. Installation

2.2.3 Servomotor

See the instruction manual of the motor you are using.
Calculate motor pulley outer diameter from the below fromula.
Or select the best motor from Table 2.

$$\text{Motor pulley O.D.} = \frac{\text{Sewing speed}}{\text{Servomotor speed}} \times 61+5 \text{ mm}$$

Commercially available pulleys have outer diameters incremented every 5 mm, therefore select a pulley of an outer diameter that is near to the calculated outer diameter.

Table 2

Sweing speed (rpm)	Motor pulley diameter	
	Servomotor speed (rpm)	
	3000	3600
3000	72	60
3300	78	66
3500	83	70
3800	89	75
4000	94	79

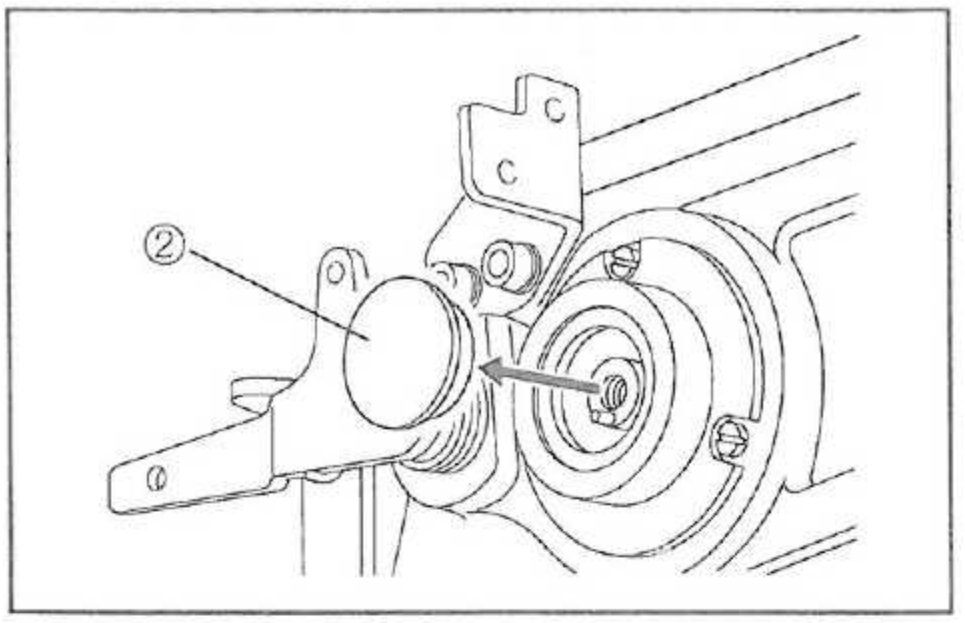
Numerical figures are examples for servomotors of 3000 and 3600 rpm.

2.2.4 Belt

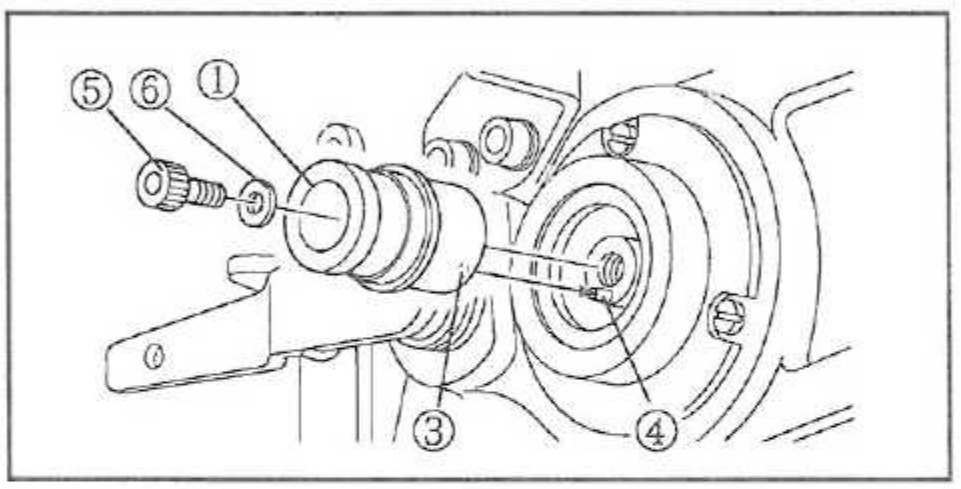
Please use M-type belt.
Sizes specifiaction, plase refer to Table 1.

2.3 Installation of synchronizer

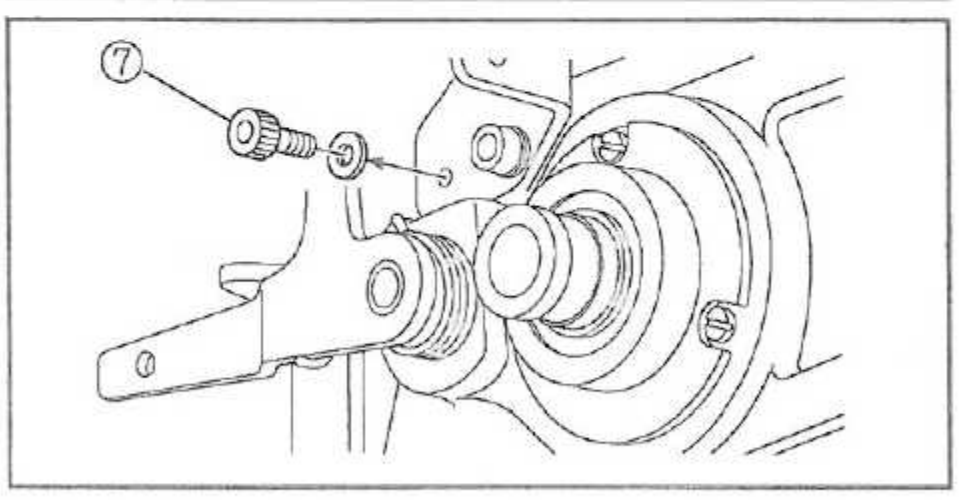
Following are how to instal synchronizer ⑪ (sersor), or instal synchronizer connector ① for synchronizer.



(1) Take away rubber cover ②.



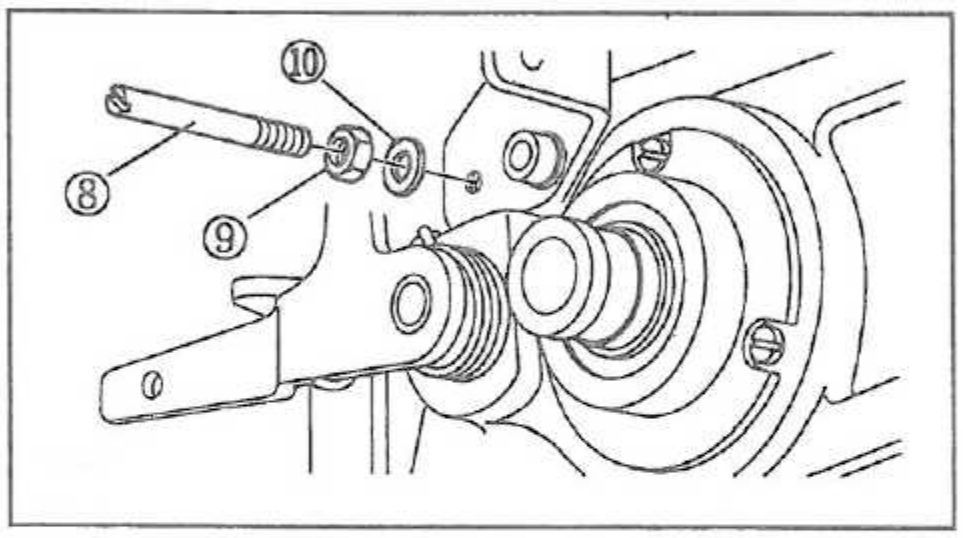
(2) Instal connector ① ③ onto stopper ④ and fix it by screw ⑤ and washer ⑥.



(3) Take off fix screw ⑦ from connection plate.

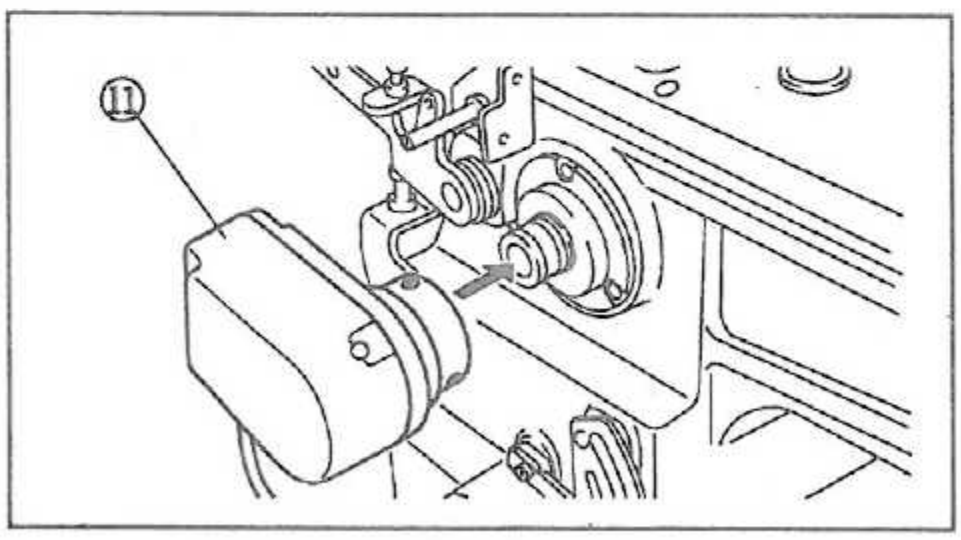
2. Installation

(4) Instal nut ⑨ onto stopper ⑧ then, instal stopper ⑧ and washer ⑩ onto machine body.



※ The purpose of stopper ⑧ is to make synchronize ⑪ fixed and will not moving around.

※ Please refer to instruction manual of servo motor for its instruction and adjustments.

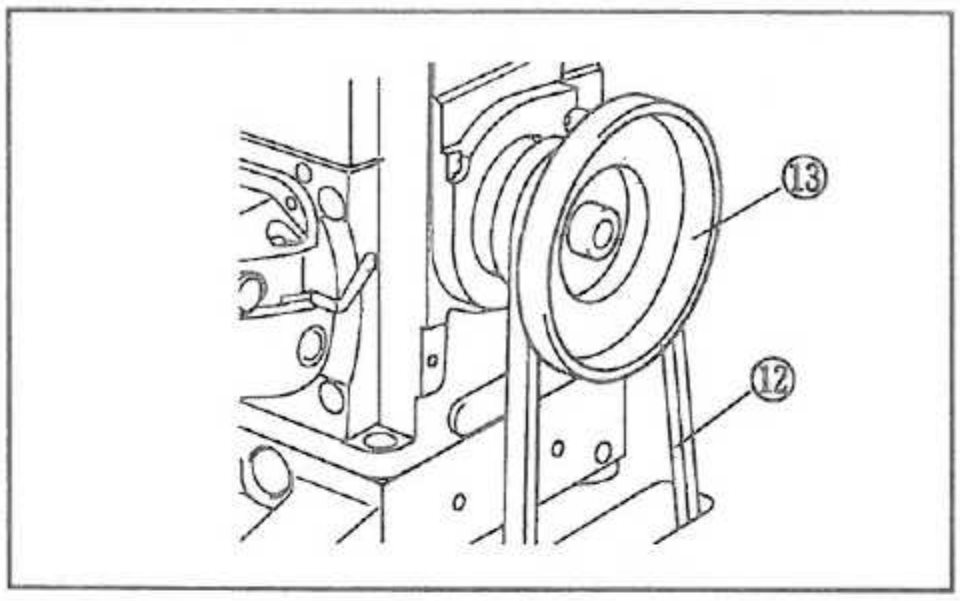


2.4 Hanging the belt

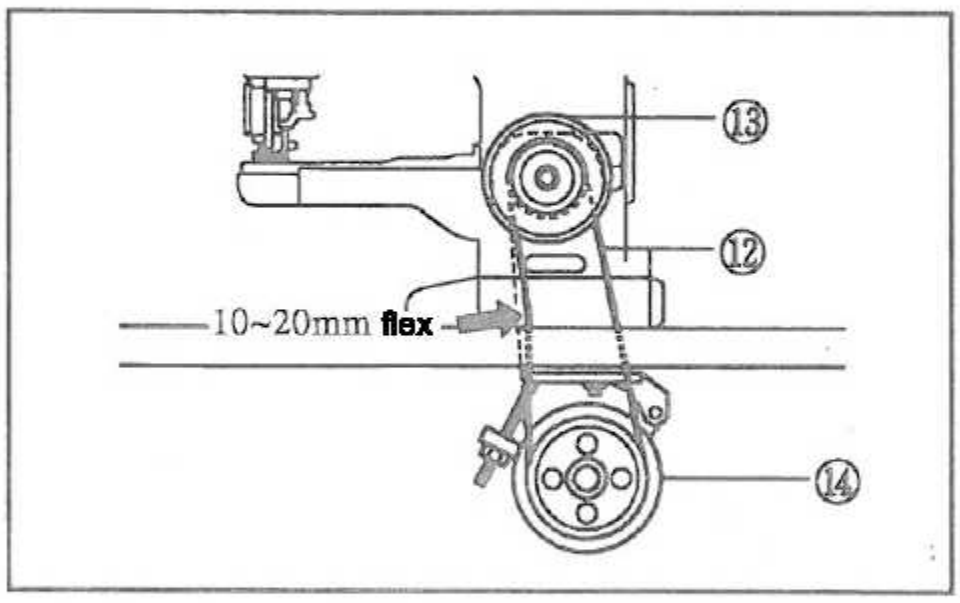
⚠ CAUTION

Shut off the power to the motor and check motor rotaion has stopped completely before hanging or replacing the belt. If power is on, hands or clothing may entangled and casusing injury.

(1) Hang the belt ⑫ around the machine pulley ⑬ .
(2) Whlie turning the machine pulley ⑬ , hang the belt ⑫ around the motor pulley ⑭ .
(3) Stretch the belt so that the belt flexes 10 - 20 mm when a force of about 10 N (1.02 kgf) is applied to the center of the belt.
(4) Once the belt is sufficiently taut, lock the motor pulley securely.



* Depends on different types of motor, there will have different ways of how to install motor, therefore, please see the Is Instruction manual of the motor.

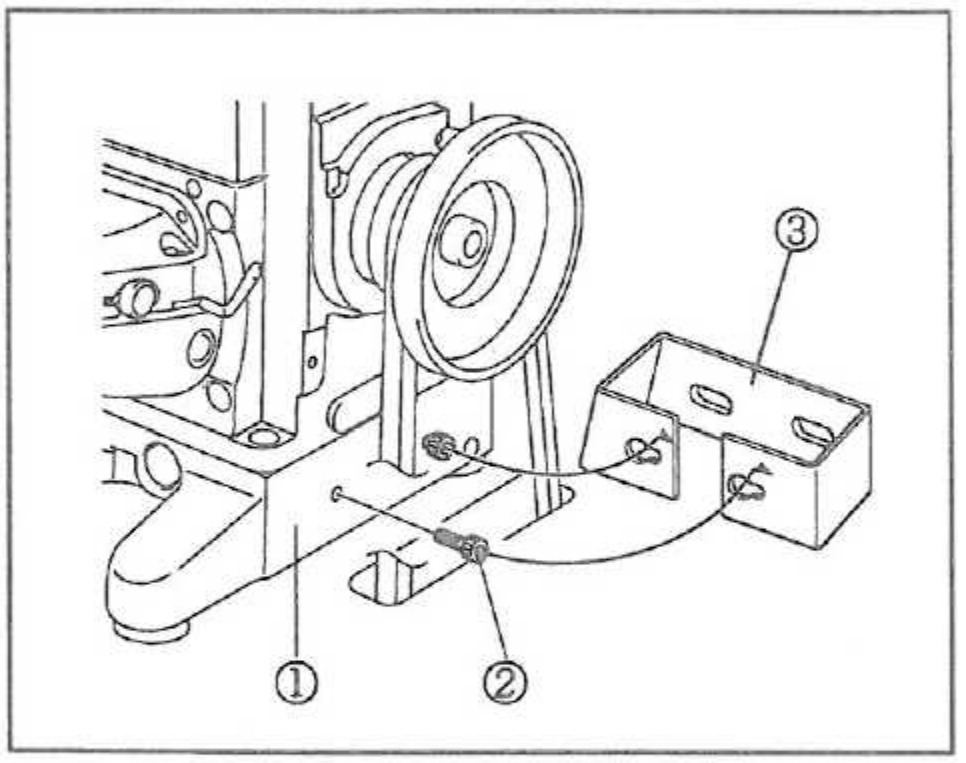


2. Installation

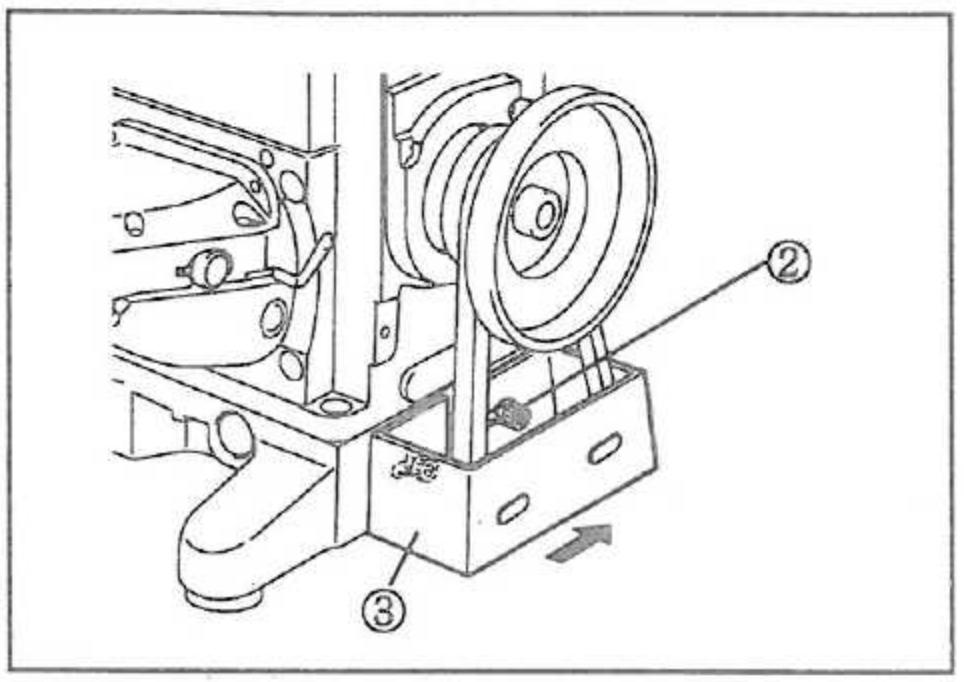
2.5 Belt cover installation

⚠ CAUTION

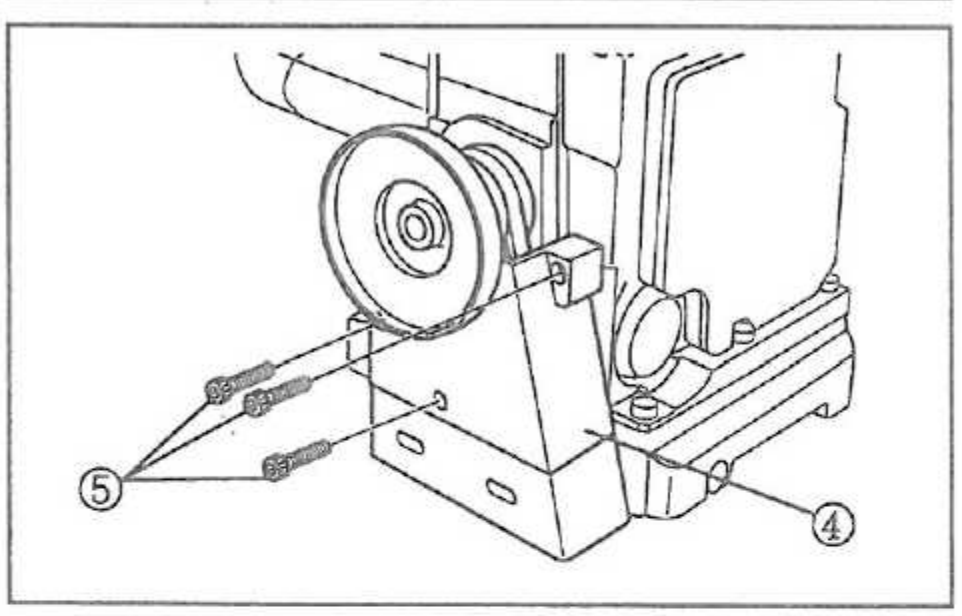
- Shut off power to the motor and check motor rotation has stopoed before installing the belt cover. Working with the power on can result injury.
- Install the belt cover without fail.
  If the belt cover is not installed, hands, clothing or the stitched fabric may become entangled in the belt resulting in injury or damage.



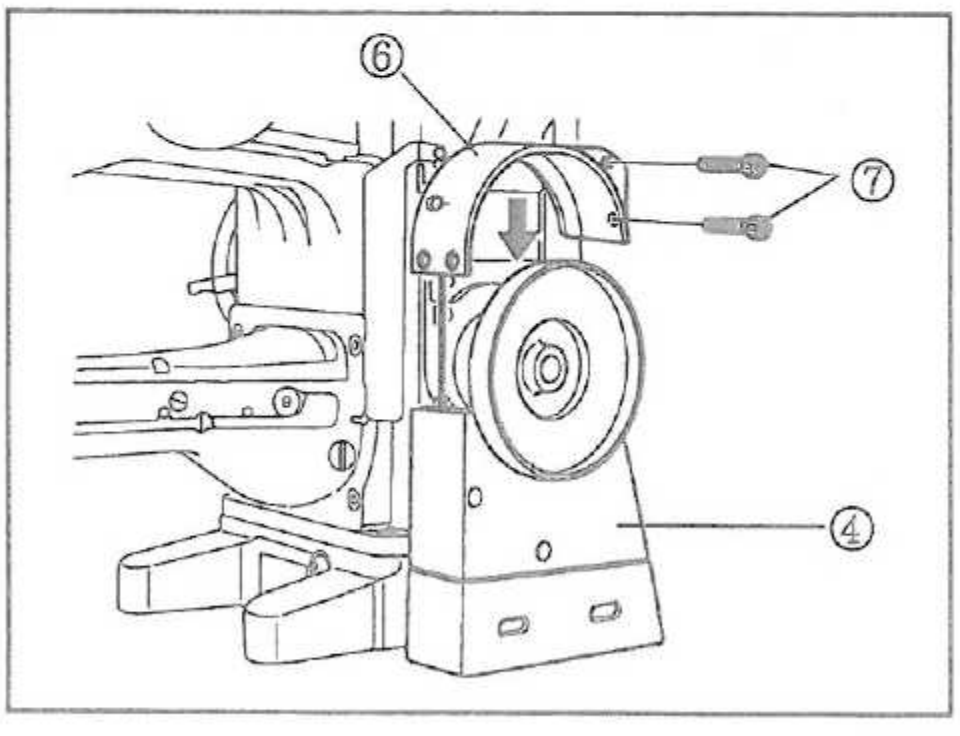
(1) Insert the screws ② halfway into the oil reservoir ① .
(2) Fit the holes on the supplementary belt cover ③ over the heads of the screws ② , slide the cover to rear and tighten the screws ② .



(3) Attach the belt cover(lower) ④ to the sewing machine with the screws ⑤ .



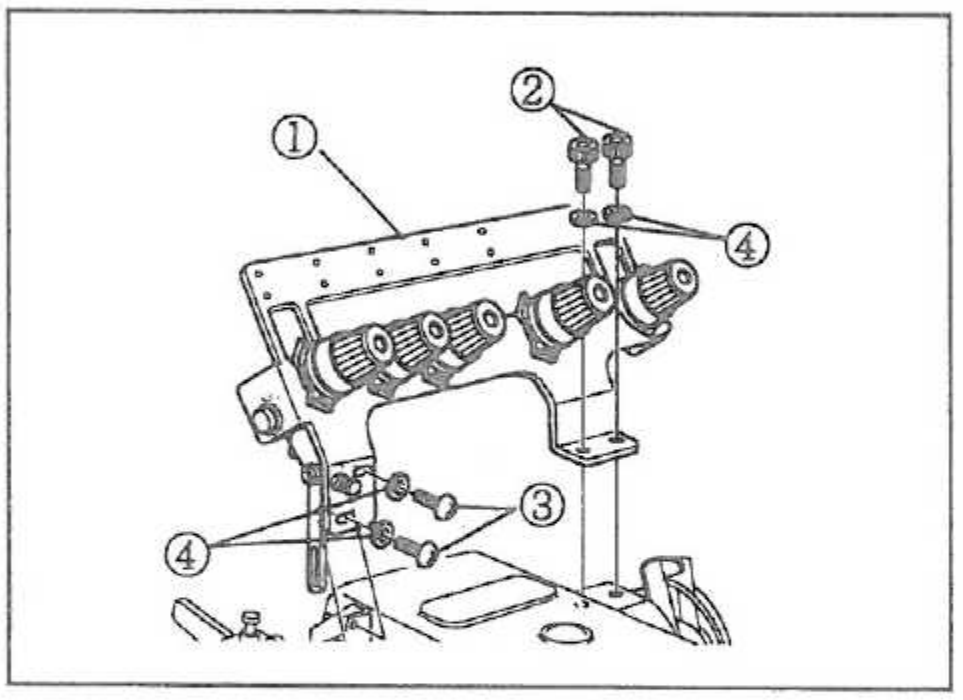
(4) Fit the belt cover(upper) ⑥ onto the belt cover(lower) ④ and lock in place with the screws ⑦ .



2. Installation

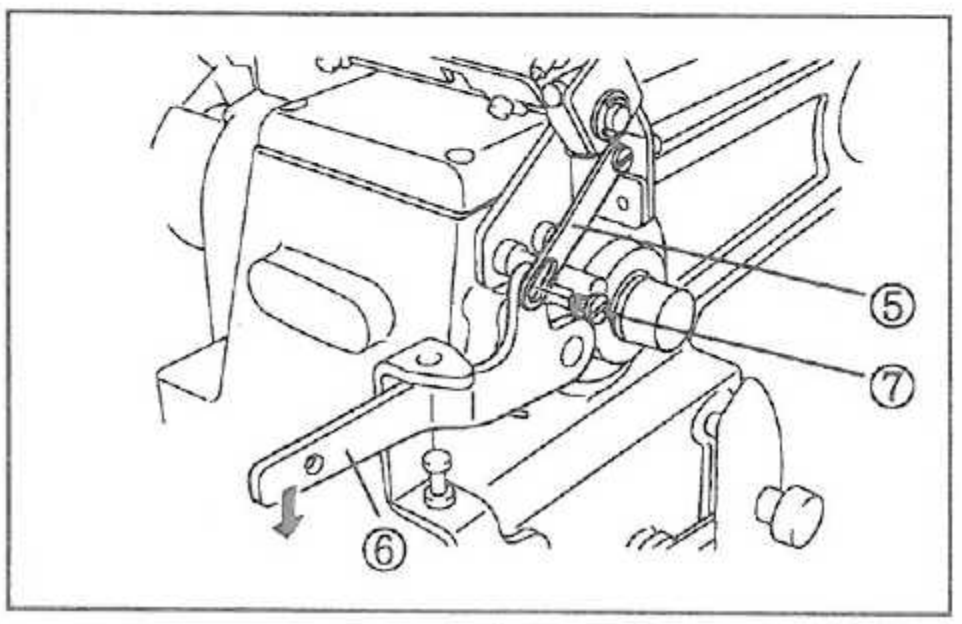
2.6 There tension unit installation

(1) Attach the thread tension unit to the sewing machine with the screws ② ③ and the washers ④ (2 on each left and right.)



(2) Attach the tension release lever connector ⑤ to the lifter lever ⑥ with the screws ⑦ .

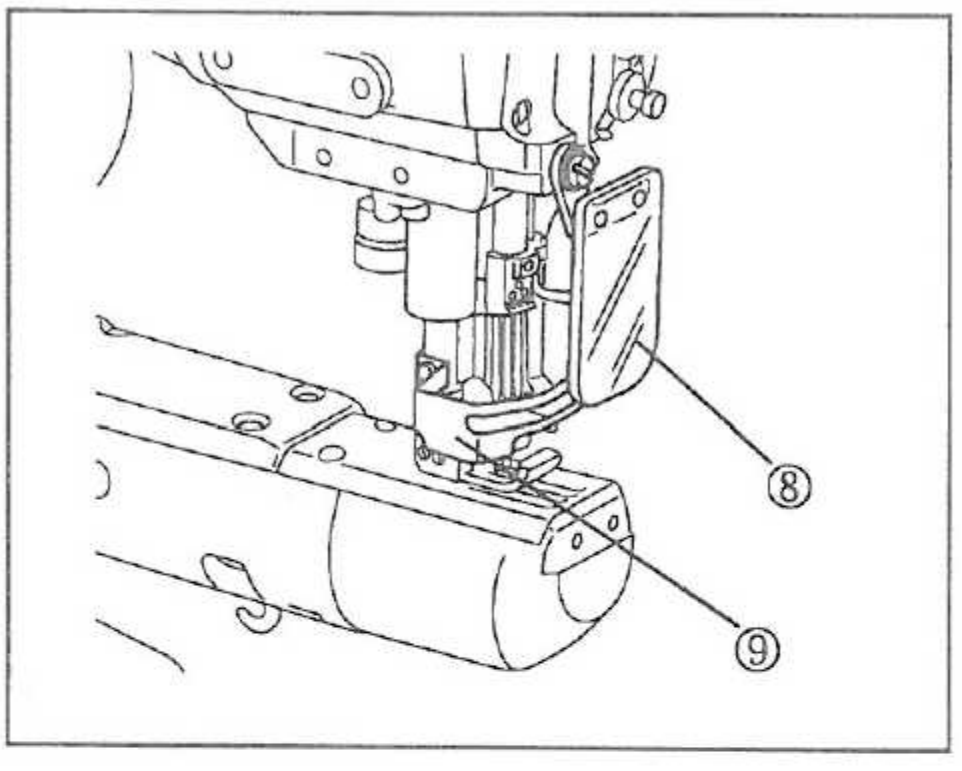
(3) Press the lifter lever ⑥ downward to check it moves smoothly.



2.7 Eye guard and finger guard installation

⚠ CAUTION

Use the sewing machine with the eye guard ⑧ and the finger guard ⑨ attached. Also, lower the eye guard ⑧ to the set position when working.



2. Installation

2.8 Presser lifter pedal installation

Attach the presser lifter shaft(lower) on the underside of the table and then connect the presser lifter pedal and lifter lever to presser lifter shaft(lower) by chains.

(1) Attach the presser lifter shaft support ① on the underside of the table with the screws ② .

(2) Pass the presser lifter shaft(lower) ③ through the collar ④ , return spring ⑤ , lifter shaft lever ⑥ and presser lifter shaft support ① as shown in the figure.

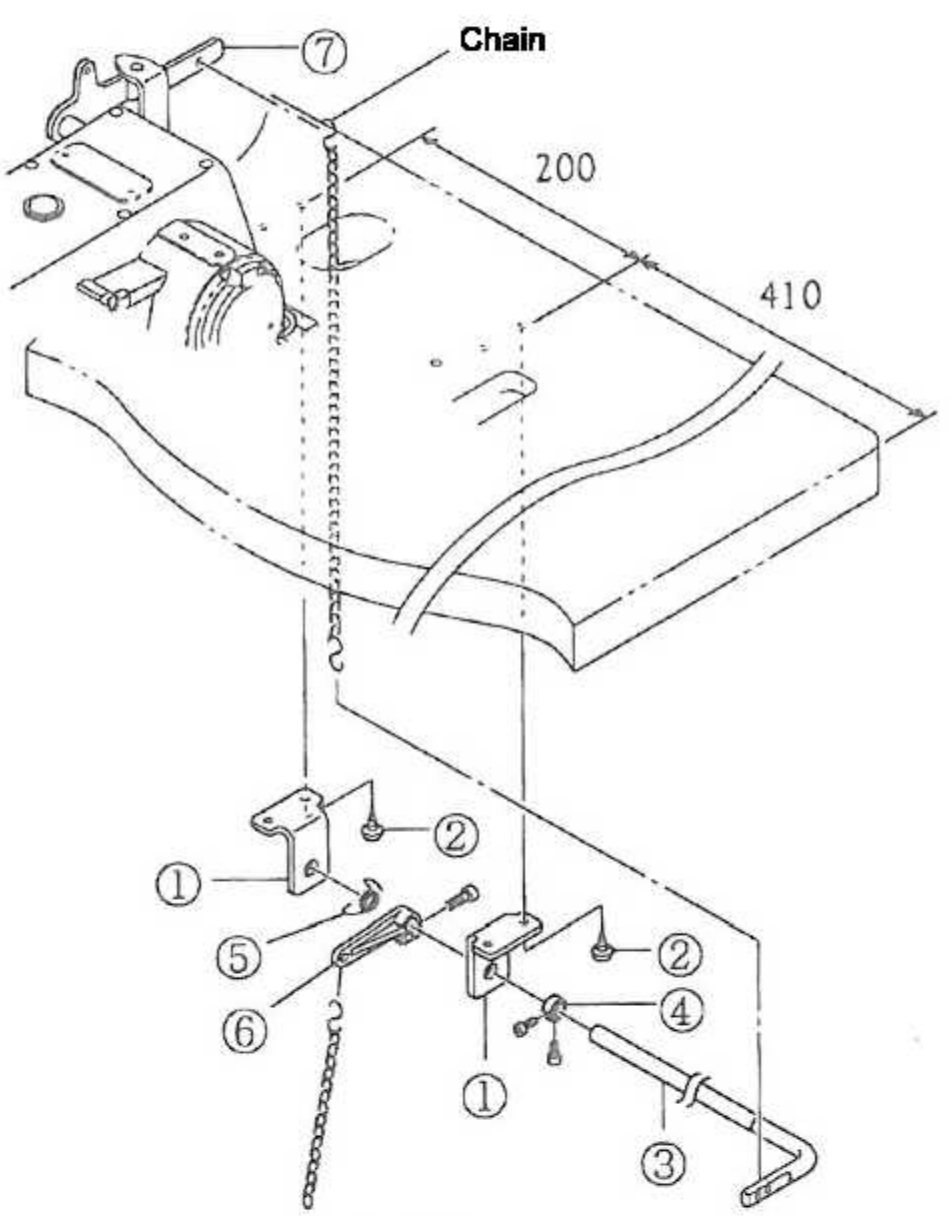
(3) Check that the presser lifter shaft(lower) ③ turns smoothly.

(4) Move the collar ④ to the left and right so that the arm of the presser lifter shaft(lower) ③ is directly beneath the lifter lever ⑦ .

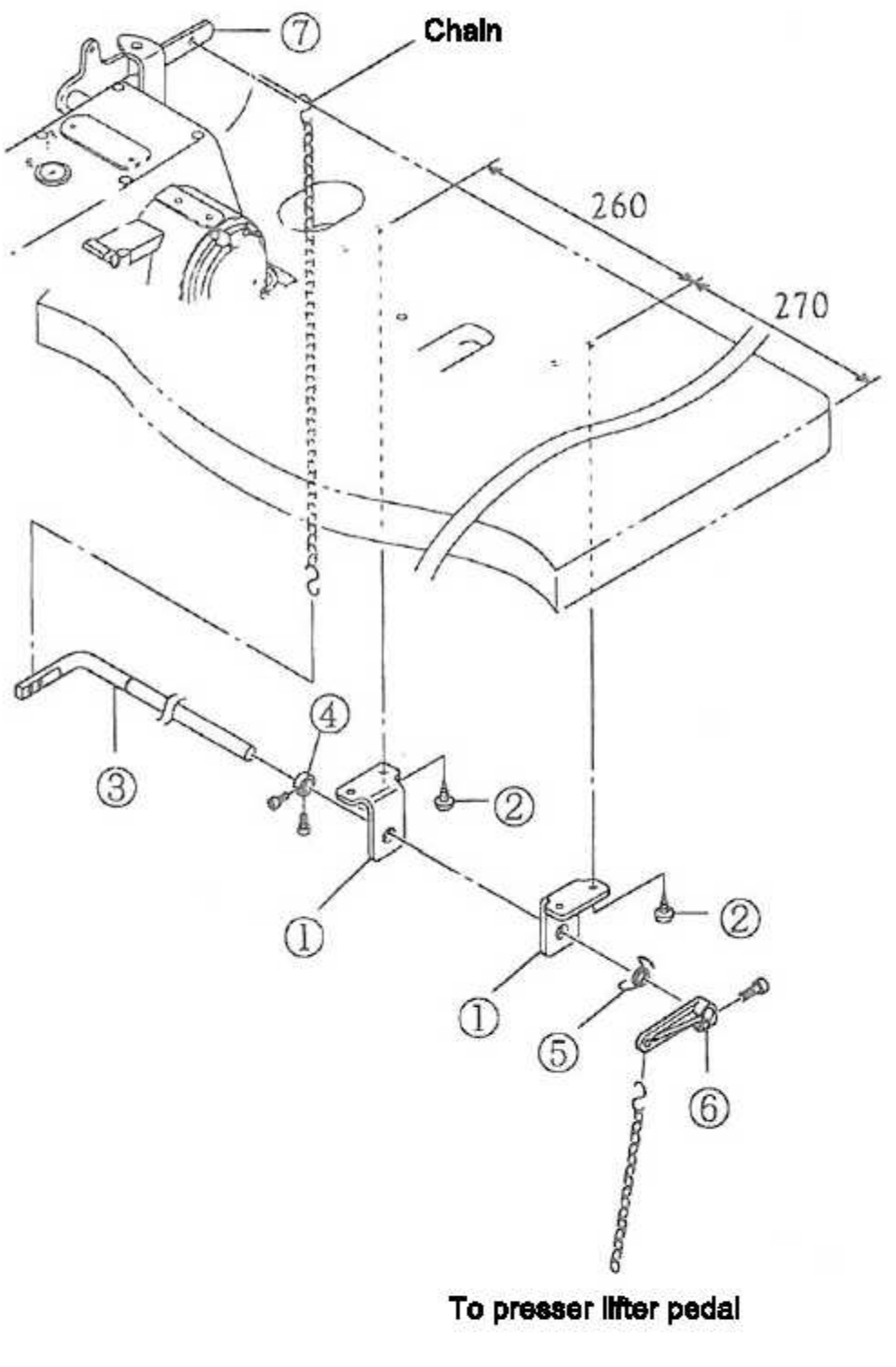
(5) Lock down the arm of the presser lifter shaft(lower) ③ , so that it is parallel to the lifter shaft lever ⑥ .

(6) Connect the arm of the presser lifter shaft(lower) ③ and the lifter lever ⑦ , and the lifter shaft lever ⑥ and the preseer lifter pedal by chains.

When attaching peddal to right side of table



When attaching peddal to left side of table

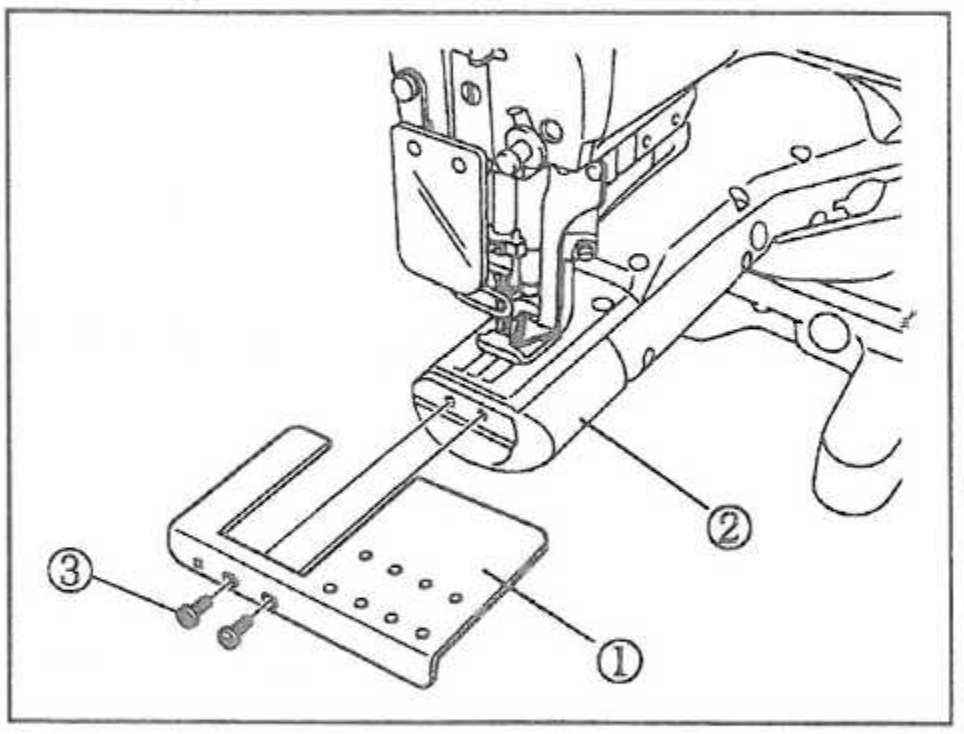


2. Installation

2.9 Supplementary cover installation

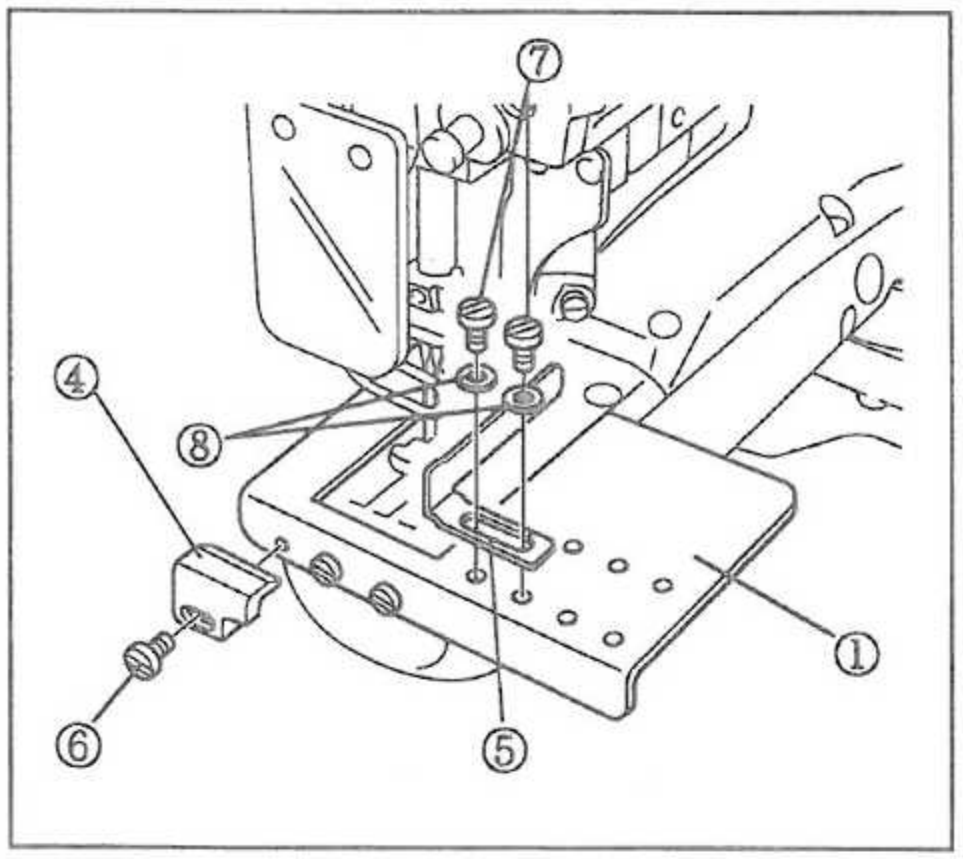
Attach the supplementary cover ① to the cylinder from cover ② with the screws ③.

*** The fabric edge guides ④ ⑥ can be attached to the supple-mentary cover ① with the screws ⑧ ⑦ and the washers ⑧.**



⚠ CAUTION

Shut off power to the motor and check motor rotation has stopped before installing the supplementary cover. Working with the power on can resuit in injury.



3. Lubrication and oil

⚠ CAUTION

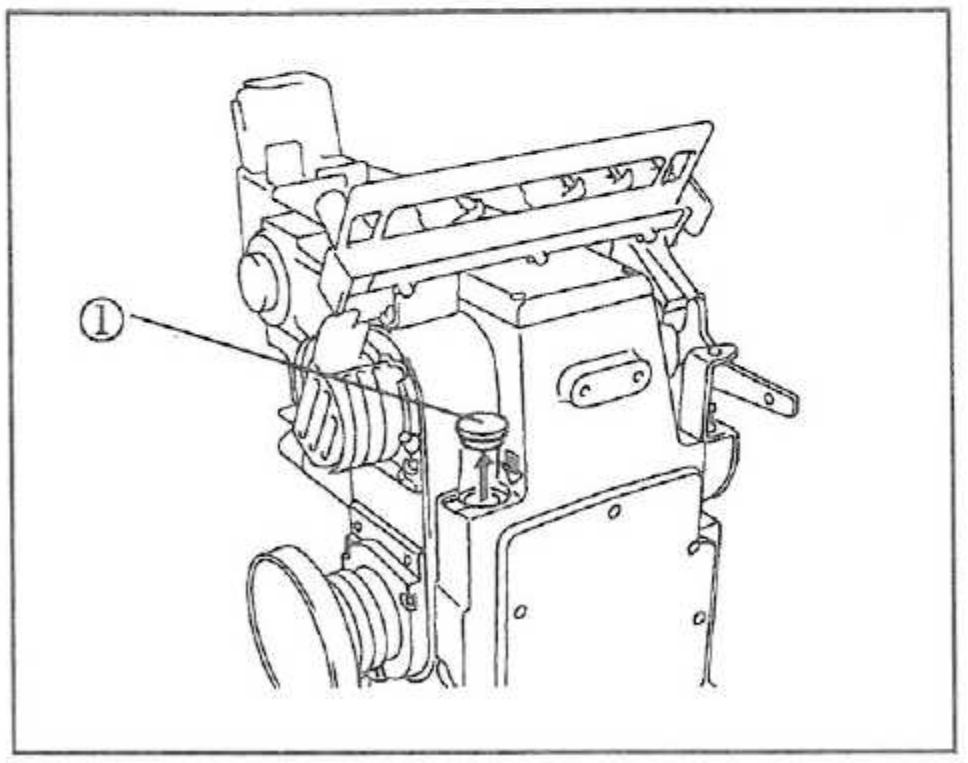
Shut off power to the motor and check motor rotation has stopped before perfroming work. Working with the power on can result in injury.

3.1 Lubricating oil

⚠ CAUTION

Do not use oil additives as they can deteriorate the oil resulting in sewing machine breakdown.

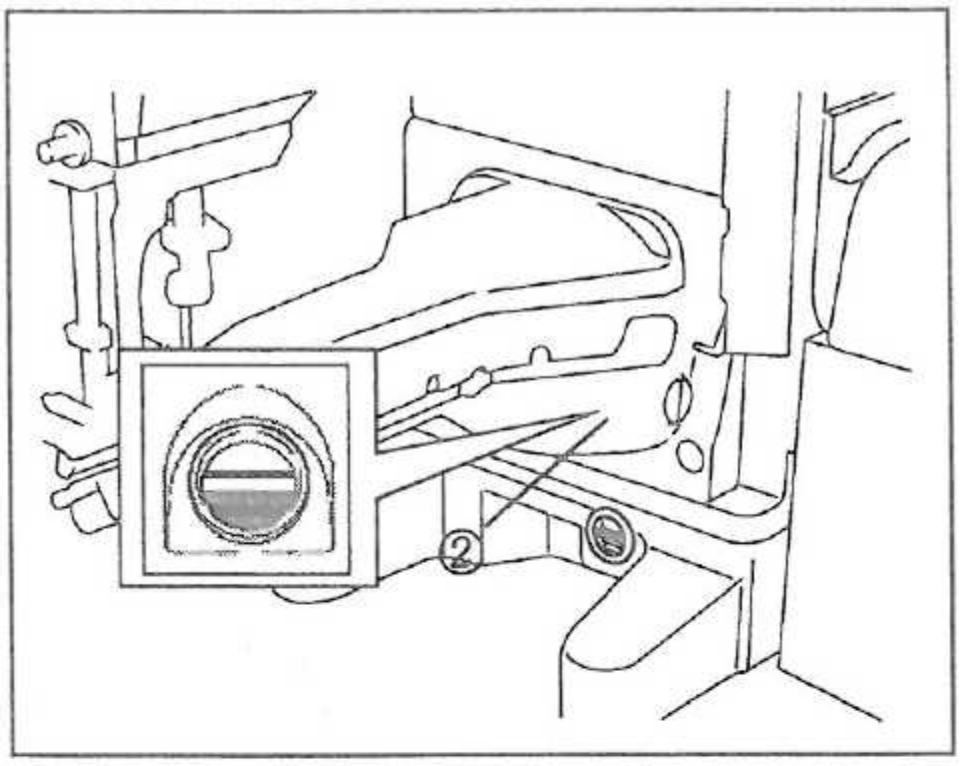
Lubricating oil : Kingtex oil
Capacity of oil reservoir : 600 cc



3.2 Lubricating

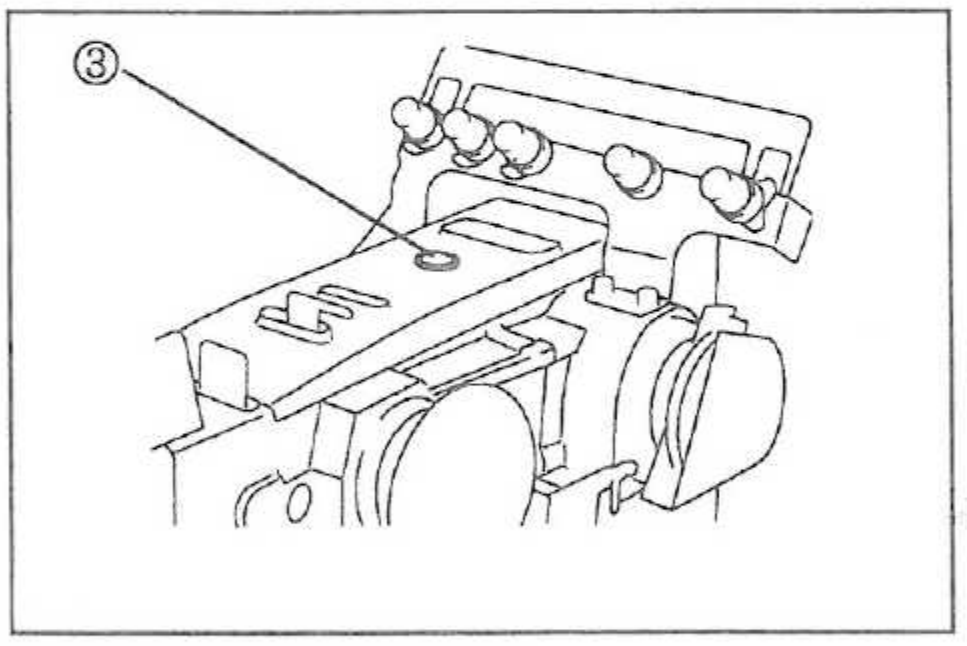
3.2.1 When using a sewing machine for the first time

A sewing machine is shipped with the oil drained. Before using a sewing machine for the frist time, charge with oil. To add oil, remove the rubber seal plug ① labeled "OIL" and add oil up to the top line on the oil gauge ②.



3.2.2 Checking oil level

After starting the sewing machine, check oil is coming from the nozzle looking from the oil sight window ③. If oil is not coming out, check and replace the oil filter (see pg. 28).



⚠ CAUTION

If very little oil is sprayed from the nozzle despite a suf-ficient charge of oil or if there are many bubbles in the oil, check and replace the oil filter.

4. Proper operation

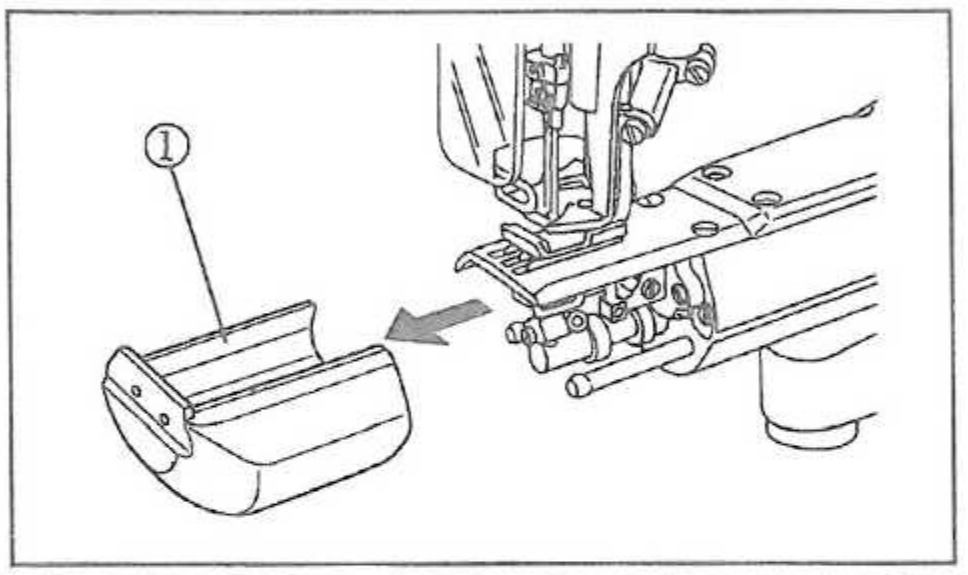
4.1 Removing and resetting the cylinder front cover

How to remove

Slide the cylinder front cover ① towards the front of the sew-ing machine and off.

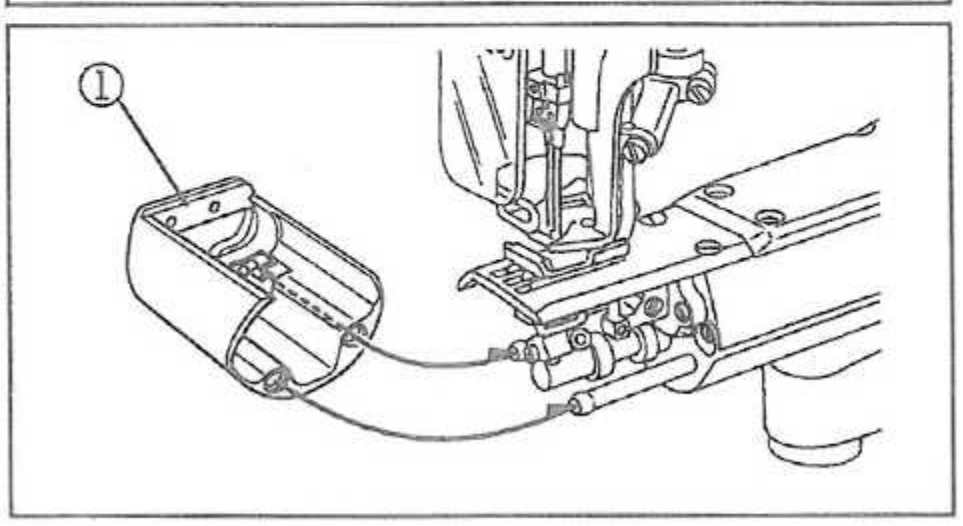
How to reset

Align the cylinder front cover ① with the pins and slide it onto the sewing machine until hearing it catch.



⚠ CAUTION

Set the cylinder front cover ① on when sewing of safety use.



4.2 Needle system

This sewing machine uses UY x 128GAS needles.
There are many sizes of needle, therefore select a needle that is suited for the type and thickness of fabric being sewn.

Table 3

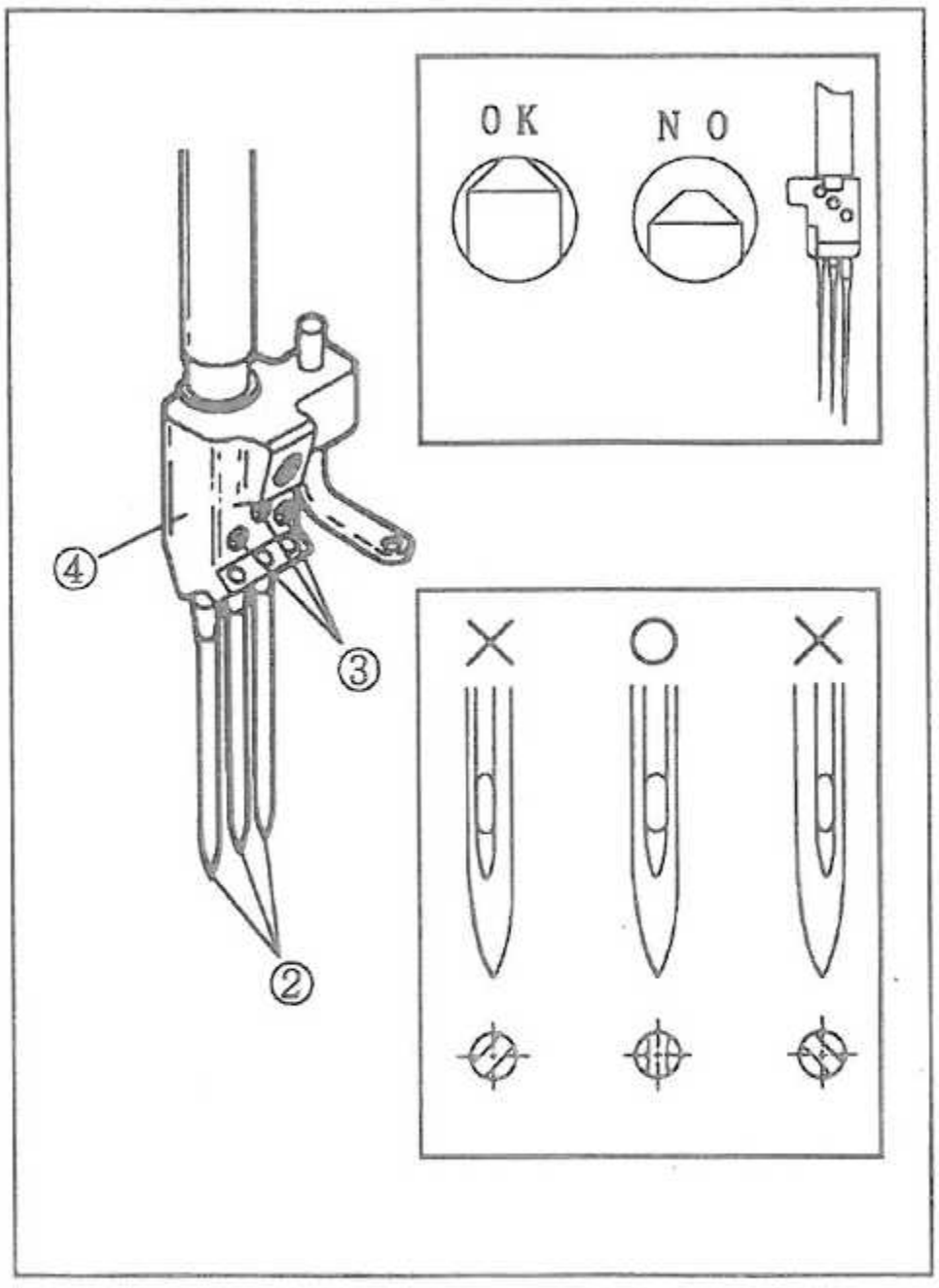
Japanese standard	8	9	10	11	12	13	14
Metric standard	60	65	70	75	80	85	90

4.3 Needle installation

⚠ CAUTION

Shut off power to the motor and check motor rotation has stopped before installing the needle. Working with the power on can result in injury.

(1) Loosen the screws ③ that lock the needles ② in place with a screwdriver.
To replace a needle ②, use tweezers to pull the old needle out.
(2) Insert a new needle with facing its scarf to the right back to the end of the hole of the needle clamp ④, with tweezers.
(3) Tighten the screws ③ to lock the needles ② in place.



⚠ CAUTION

- **Use 0.6 N·m(6 kgf-cm) of torque to tighten the screws ③.**
- **After replacing a needle, check the clearance between the needle and looper, and between the needle and needle guards (see pg.22 and 24).**

4. Proper operation

4.4 Threading

⚠ CAUTION

- Shut off power to the motor and check motor rotation has stopped before threading. Work-ing wih the power on can result in injury.
- Incorrect threading can cause skip stitch, thread breakage, and uneven stitch.

Please threading the threads according to the threading map.

ⓘ SUPPLEMENT

Raising the presser foot moves the tension release making it easier to poll the thread.

If alread threaded, tie onto it with sewing thread.

<A: Needle threads>

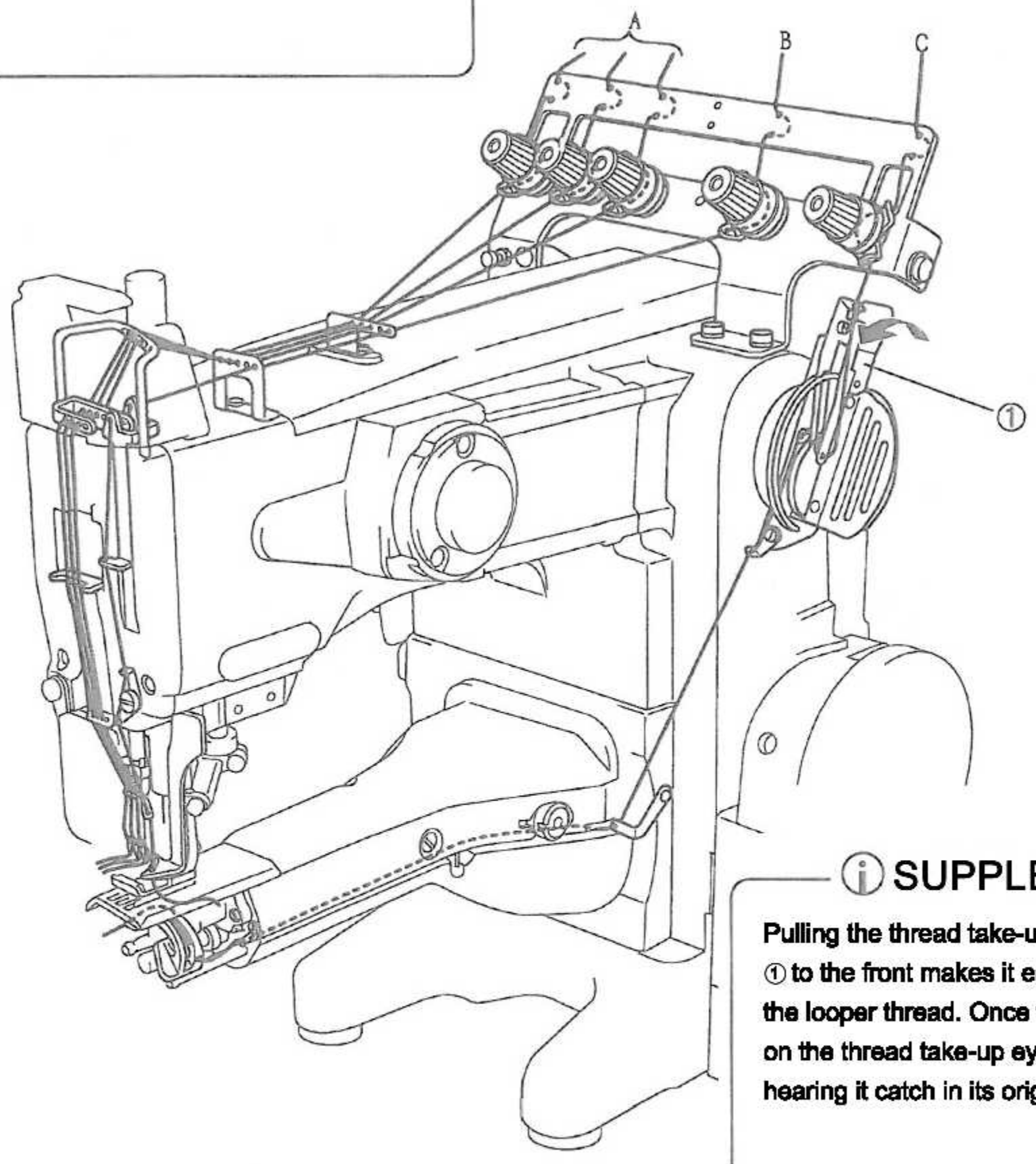
Pull the thead knots to front of needles, cut the knots off and rethread through the needles.

<B: Top cover thread>

Pull the thead until the knot comes out.

<C: Looper thread>

Pull the thead until the knot comes out, then cut the end with scissors.



ⓘ SUPPLEMENT

Pulling the thread take-up eyelet holder ① to the front makes it easier to thread the looper thread. Once threaded, press on the thread take-up eyelet holder until hearing it catch in its original position.

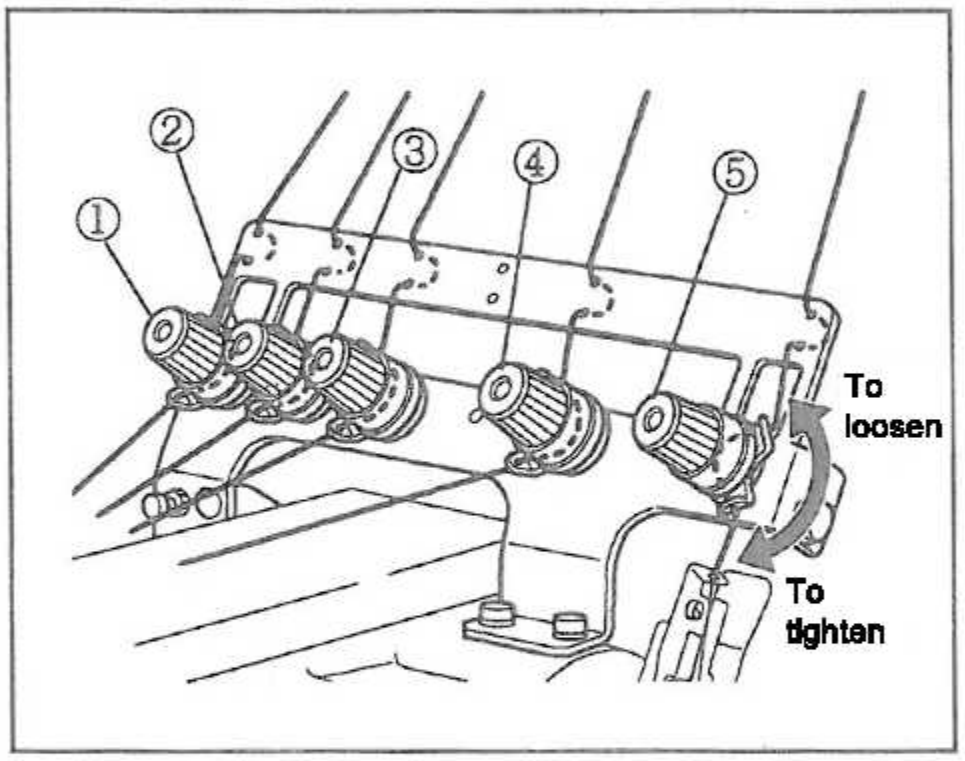
4. Proper operation

4.5 Tension adjustment at the tension unit

Thread tension varies depending on the type of fabric, type of thread, stitch width, stitch length and conditions of use. Adjust thread tension fron the Individual thread tension spring caps.

- **To tighten the thread tension, tum the caps clockwise.**
- **To loosen the thread tension, tum the caps counterclock-wise.**

① Left needle thread ④ Top cover thread
② Middle needle thread ⑤ Looper thread
③ Right needle thread



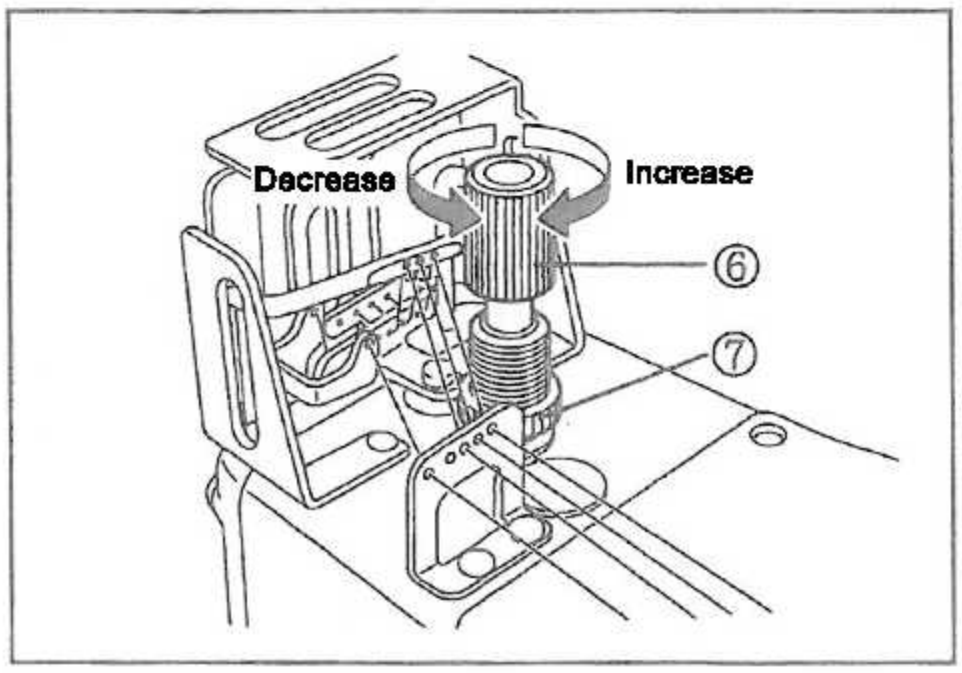
4.6 Presser foot pressure adjustment

Relieve presser foot pressure as much as possible within a range that keeps the stitch stable.

(1) Loosen the nut ⑦ and turn the presser spring regu-lator ⑥.

- **To increase the pressure, turn the regulator clock-wise.**
- **To decrease the pressure, turn the regulator counter-clockwise.**

(2) Once pressure has been adjusted, tighten the lock nut ⑦.



4.7 Differential feed adjustment

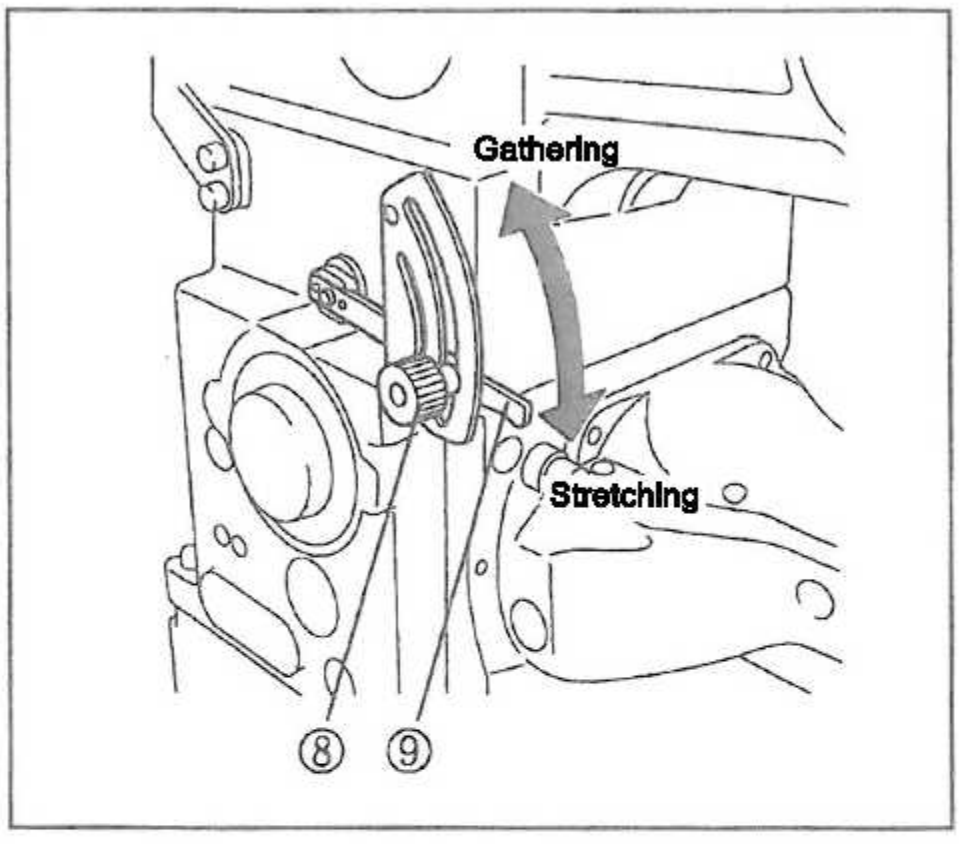
(1) Loosen the lock nut ⑧.

(2) Adjust differential feed with the differential lever ⑨.

- **To make gathering, raise the lever.**
- **To make stretching, lower the lever.**

*** Position the lever as suggested by the relationship of graduations and differential ratio of Table 4.**

(3) Once differential ratio has been adjustrd, tighten the lock nut ⑧.



⚠CAUTION

The differential ratio at the maximum stitch lenght of 4 mm is available up to 1:15.
At the maximum differential ratio of 1:2, the stitch lenght is 3 mm or less.

Table 4

Graduation	Differential ratio	Remarks
S	1:0.8	Stretching
1	1:1	
	1:1.5	Stitch length: 4mm or less
2	1:2	Stitch length: 3mm or less

4. Proper operation

4.8 Stitch lenght adjustment

⚠ CAUTION

Shut off power to the motor and check motor rotation has stopped before adjusting stitch length. Working with the power on can result in injury.

Table 5

Stitch length(mm)	Number of stitches per inch	Number of stitches per 30 mm
4.0	6	7.5
2.5	10	12
2.0	12.7	15
1.2	21	25

Table 5 shows the number of stitches per inch and 30 mm converted stitch length.

Stitch length can be adjusted infinitely from 1.2 mm to 4.0 mm.

Each graduation on the pulley indicates a stitch lenght in mm.

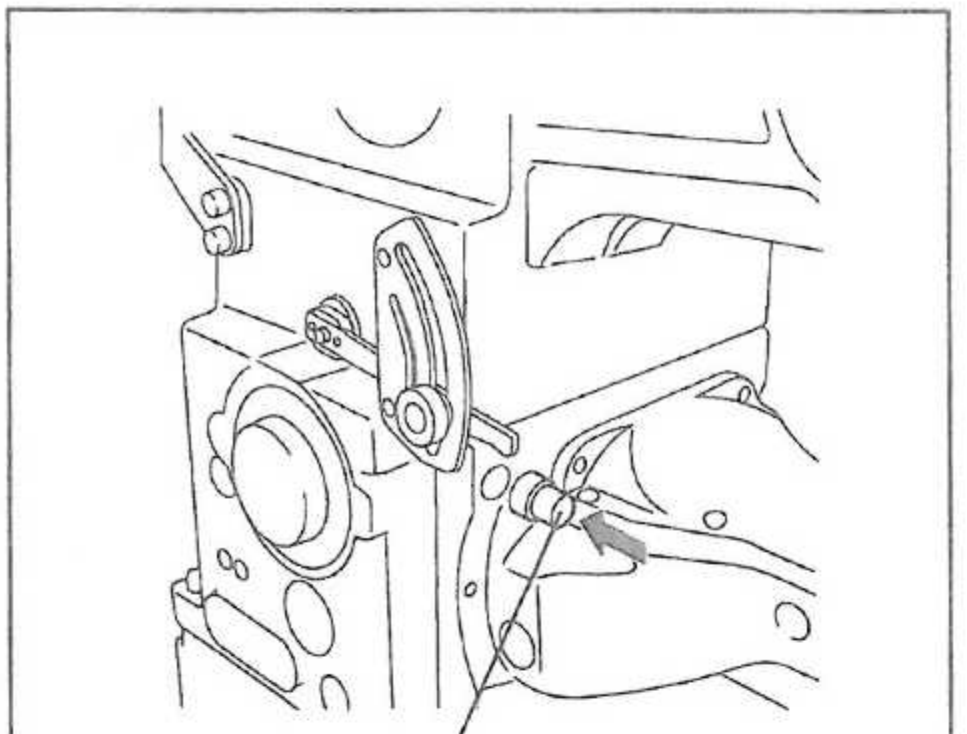
*** The actual lenght of the stitch will vary depending on the type and thickness of fabric, and differential ratio.**

4.8.1 Changing Stitch length

(1) Press the pushbutton ① with your left hand until feeling the button tip contact the internal part.

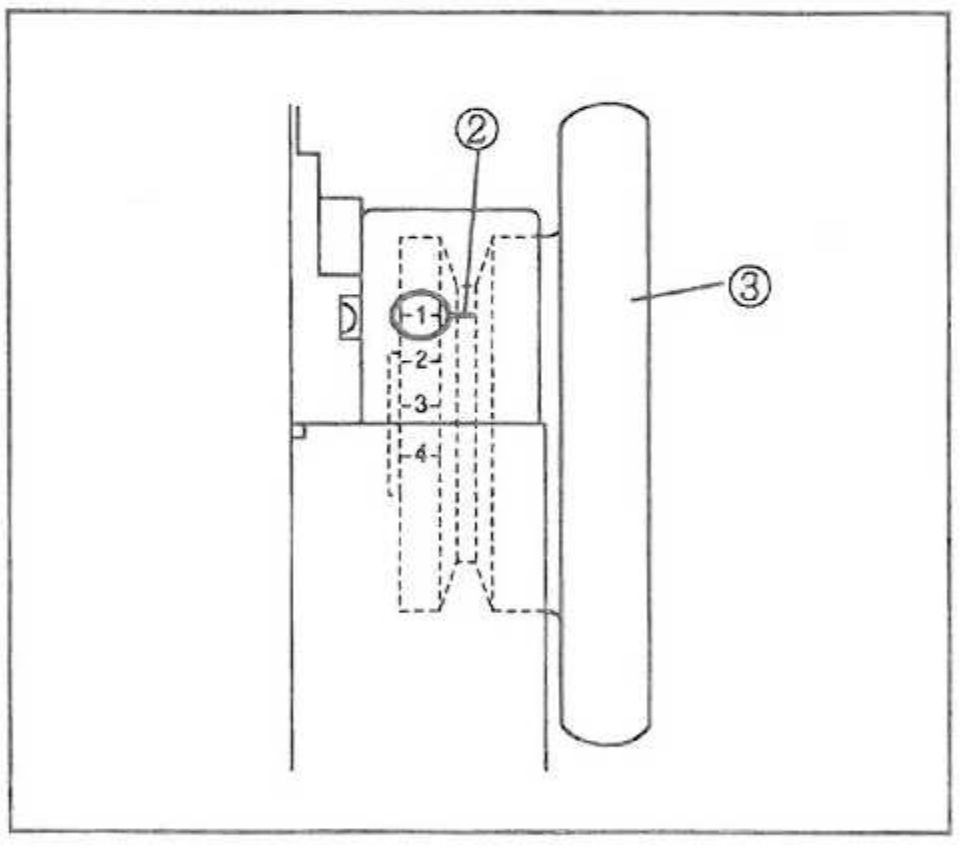
(2) With the pushbutton ① still depressed, turn the machine pulley to the front with your right hand. The pushbutton ① draws inward, therefore press the pushbutton ① forcefully.

- **To make the stitch lenght larger, turn the pully clockwise.**
- **To make the stitch lenght smaller, turn the pully counterclockwise.**



(3) With the pushbutton ① still depressed, align the scale marking of the machine pulley ③ with the mark ② on the hole of the belt cover.

(4) Once the markings have been aligned, release the pushbutton ①.



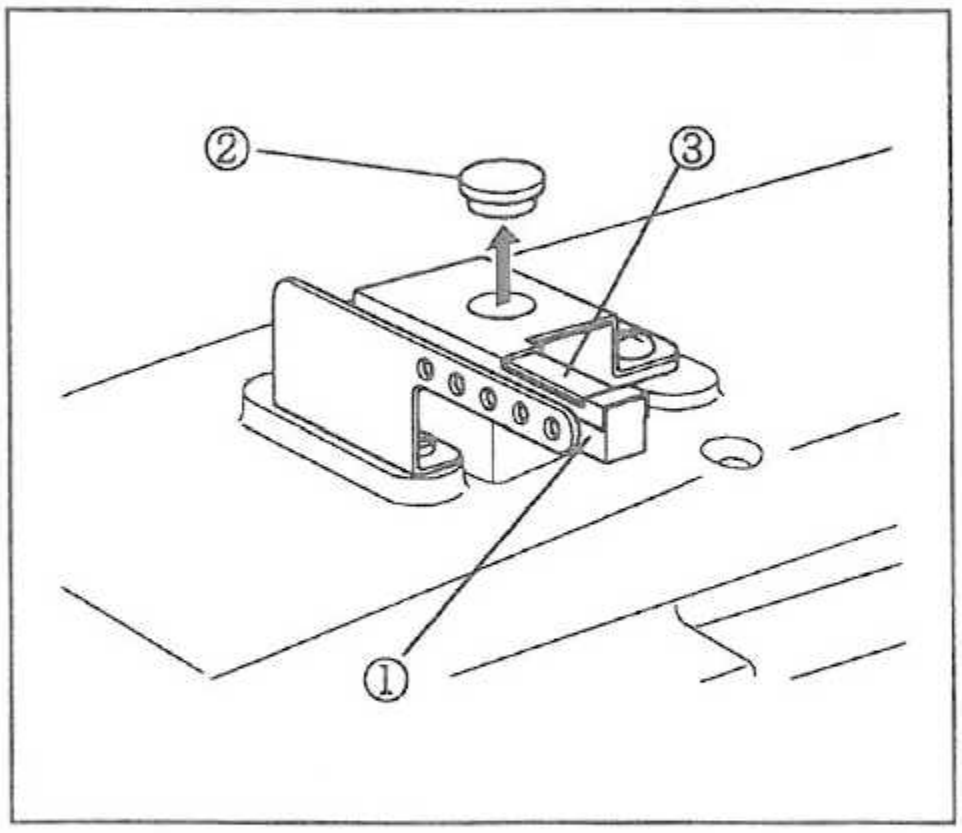
⚠ CAUTION

Check that the pushbutton returns completely to the released position and that the machine pulley rotates smoothly.

4. Proper operation

4.9 SP Device

To prevent thread breakage and skip stitch in high speed sewing or when using synthetic thread or fabric, use the SP device. The device uses(dimethyl) silicon oil.



4.9.1 Checks before use

Remove the seal plug ② from the SP container ① and check there is (dimethyl) silicon oil. If oil level is low, add(dimethyl) silicon oil.

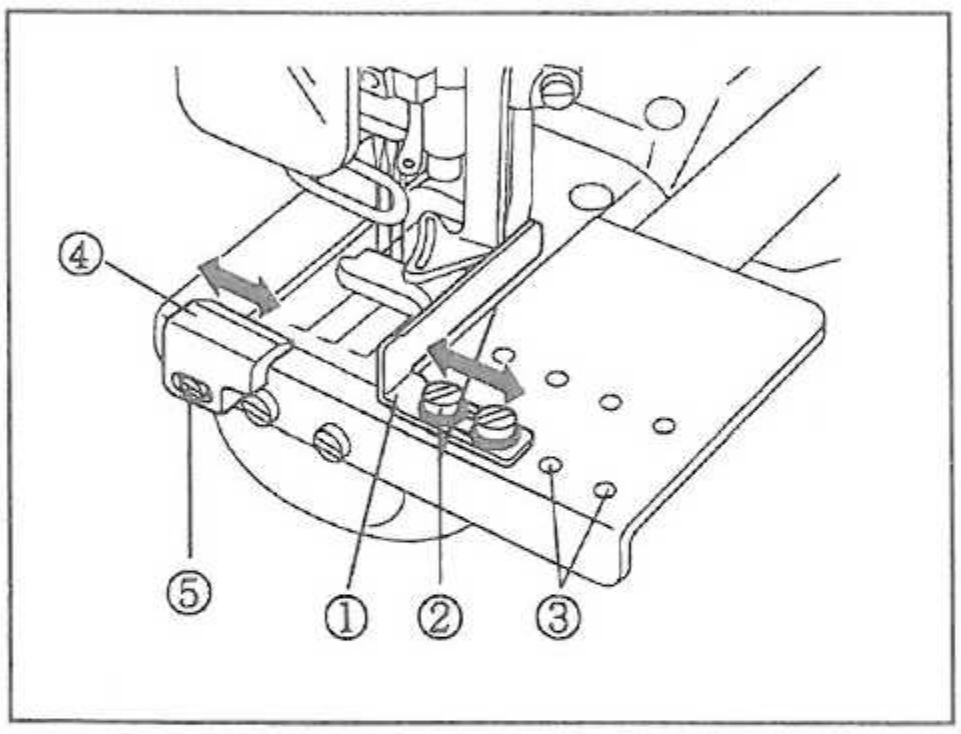
⚠ CAUTION

- **If not using the SP device, remove the felt ③ from the device. If left inside, it may adversely affect sewing.**
- **If (dimethly) silicon oil contacts any parts other than the SP device, wipe it off. Adhering (dimethly) silicon oil can result in sewing machine breakdown.**

4. Proper operation

4.10 Using the fabric edge guides

4.10.1 For hemming



The fabric edge guide(right) ① adjusts the fold width of the fabric.

(1) Loosen the screws ② and slide the fabric edge guide(right) ① to the left and right unitl properly positioned.

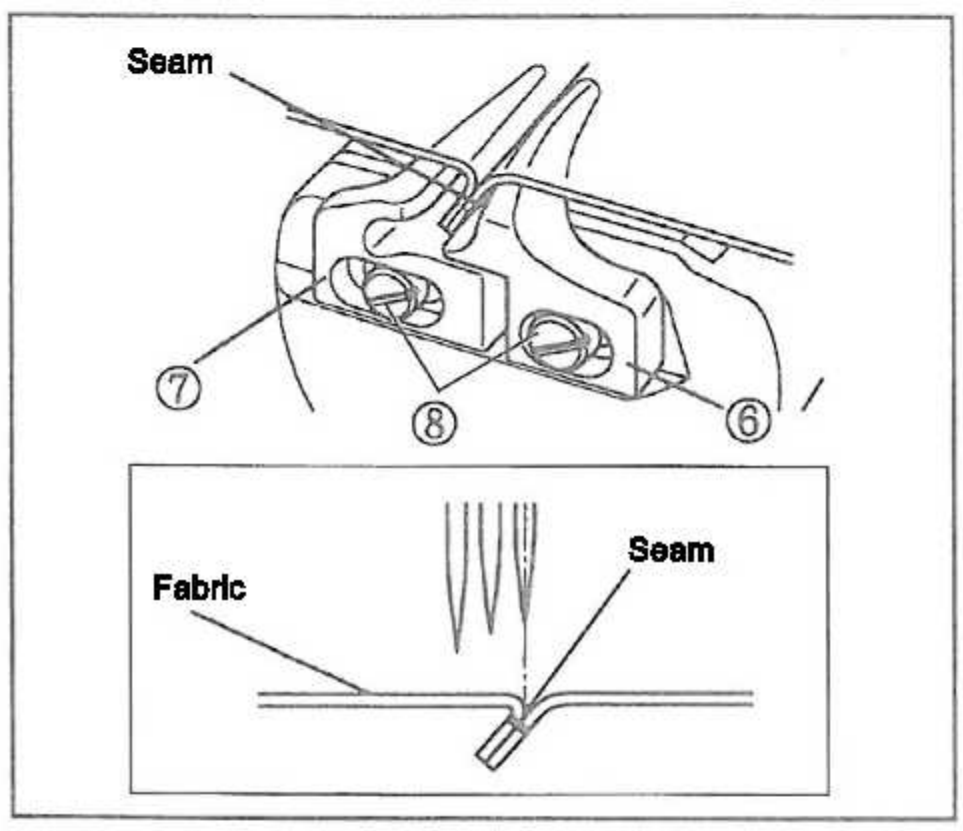
*** To greatly reposition the guide, use the other screw holes ③.**

(2) Tighten the screws ②.

The fabric edge guide(left) ④ adjusts the left edge of the folded fabric.

(1) Loosen the screws ⑤ and slide the fabric edge guide (left) ④ to the left and right unitl properly positioned.

(2) Tighten the screws ⑤.



4.10.2 For tip over covering seam

(1) Loosen the screws ⑧ of the fabric guide.

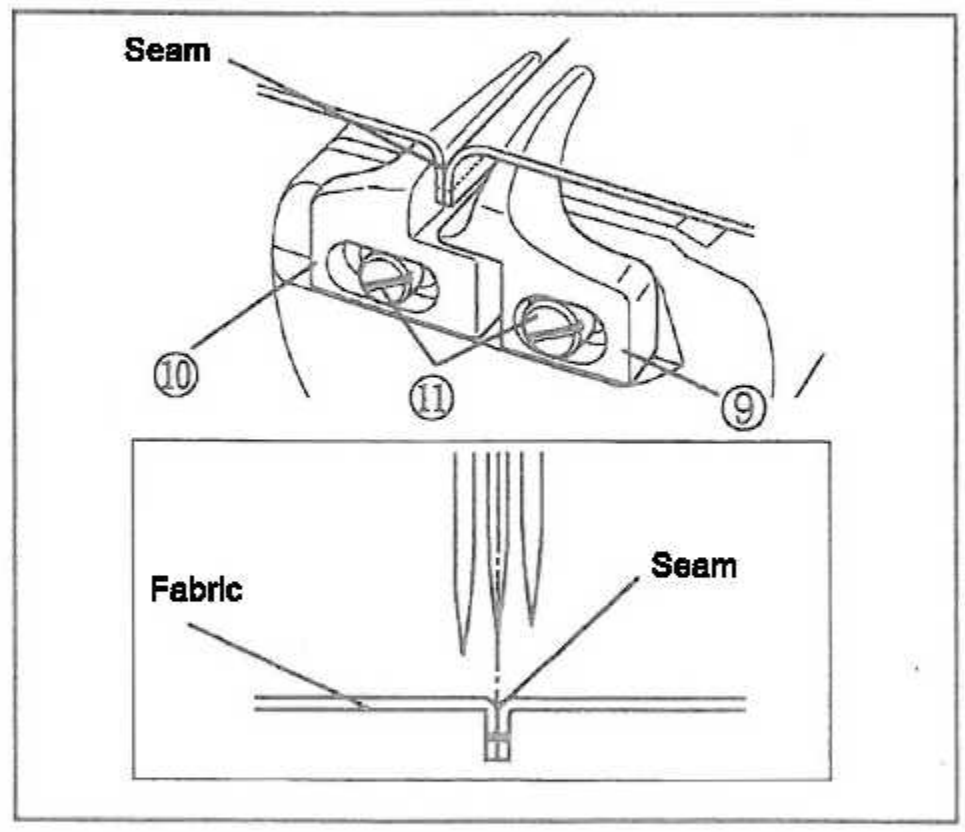
(2) Insert the aligned fabric edges between the fabric guide(right) ⑥ and fabric guide(left) ⑦ .

(3) Position the seam at the center of the right needle and adjust the clearance between the fabric guide(right) ⑥ and fabric guide(left) ⑦ to feed the fabric smoothly.

(4) Once the clearance has been adjusted, tighten the screws ⑧.

CAUTION

The positional reationship of ailgned fabric edges and the left needle varies depending on the piece of the garment.



4.10.3 For covering seam

(1) Loosen the screws ⑪ of the fabric guide.

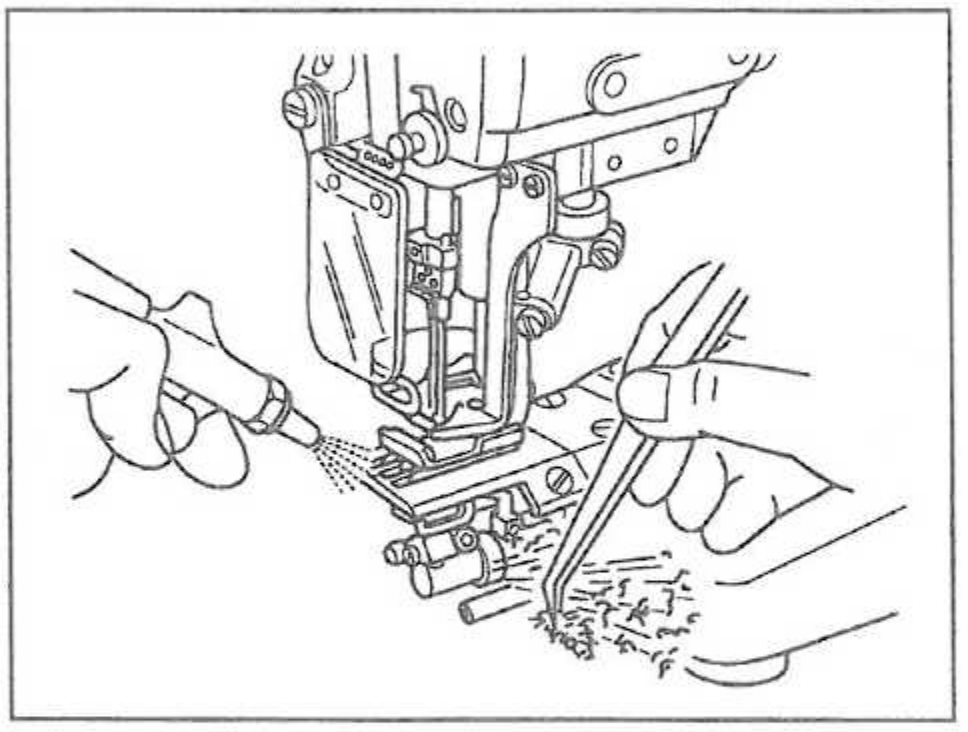
(2) Spread open the fabric seam, position the seam at the center of the needle width and adjust the clearance between the fabric guide(right) ⑨ and fabric guide(left) ⑩ to feed the fabric smoothly.

(3) Once the clearance has been adjusted, tighten the screws ⑪.

5. At the End of work

⚠ CAUTION

Shut off power to the motor and check motor rotation has stopped before cleaning. If power is on, hands or clothing may become entangled whereby resulting in injury.



At the end of work everyday, remove the cylinder front cover and clean away any and lint accumulated in the sewing machine.

Once a week, remove the cylinder front cover and the presser foot, and clean in and around the stitch plate and feed dog.

6. Checks and maintenance

⚠ CAUTION

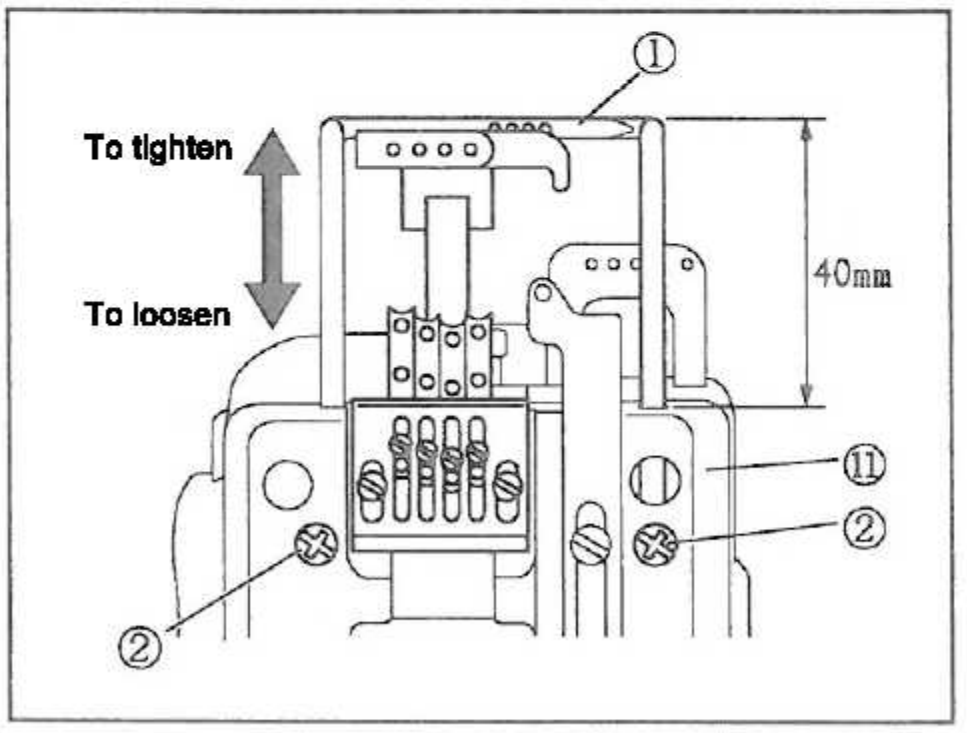
Shut off power to the motor and check motor rotation has stopped before performing check and maintenance.

6.1 Needle thread tension adjustment

6.1.1 Needle thread eyelet(front) adjustment

The tension of the needle threads can be adjusted with the needle thread eyelet(front) ①. In the standard position, the top surface of the arm ⑪ and the top surface of the needle thread eyelet(front) ① is 40 mm apart.
Loosen the screws ② to adjust the needle thread eyelet (front) ①. Once the eyelet has been positioned, tighten the screws ②.

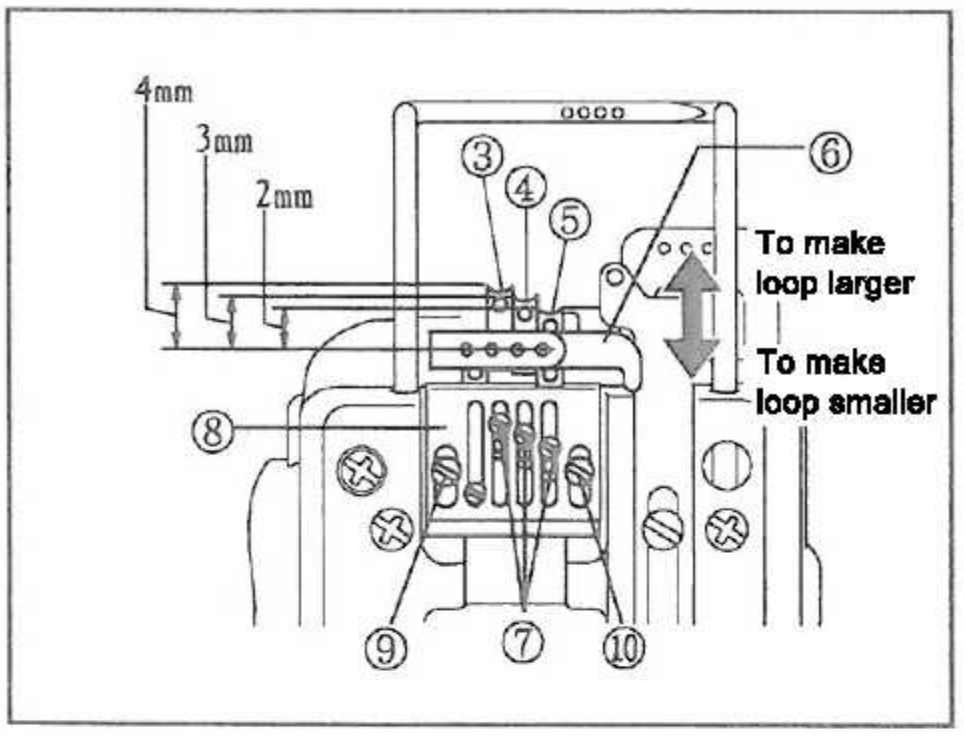
- **To loosen the needle thread, lower the needle thread eyelet(front).**
- **To tighten the needle thread, raise the needle thread eyelet(front).**



6.1.2 Needle thread strike-off pin adjustment

The size of the needle thread loops can be adjusted with the needle thread strike-off pins ③ ④ ⑤. In the standard position, the center of the eye on the needle bar thread eyelet ⑥ and the top edge of needle thread strike-off pins of the right needle, middle needle and left needle are 2, 3 and 4 mm apart respectively when the needle bar is at the lowest point.
Loosen the screws ⑦ to adjust the needle thread strike-off pins ③ ④ ⑤. Once the pins have been positioned, tighten the screws ⑦.

- **To make loop smaller, lower the needle thread strike-off pin.**
- **To make loop larger, raise the needle thread strike-off pin.**



6.1.3 Holder adjustment

After changing the type of thread, the position of the holder ⑧ can be moved to adjust the size of the loop of the all needle threads.
Loosen the screws ⑨ ⑩ to adjust the holder ⑧. Once the holder has been positioned, tighten the screws ⑨ ⑩ .

- **To make loop smaller, lower the holder.**
- **To make loop larger, raise the holder.**

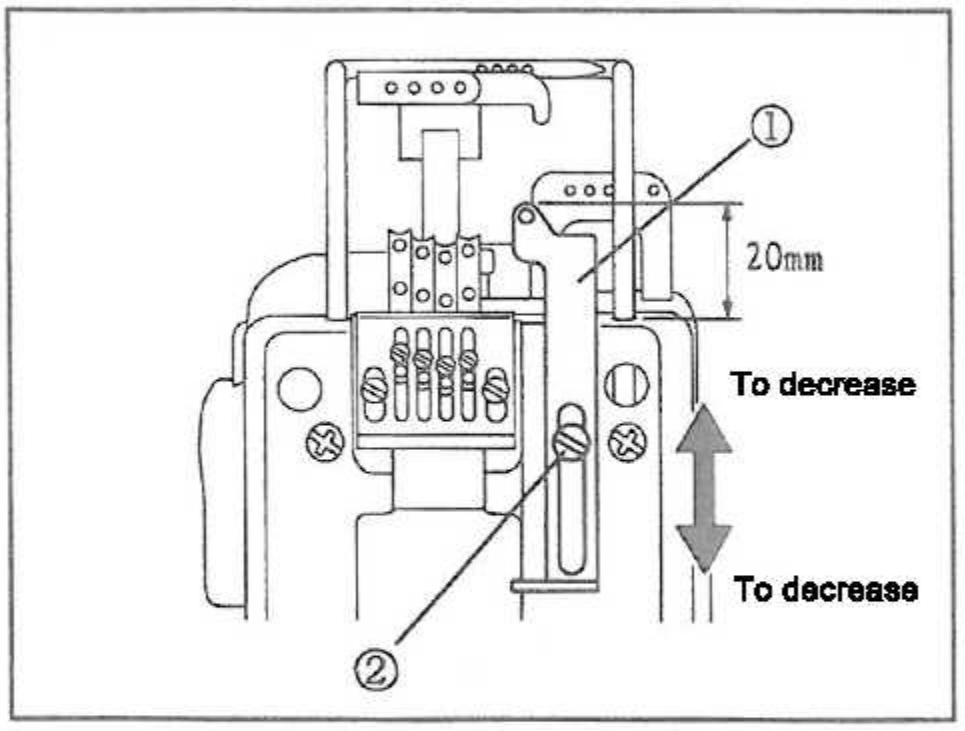
6. Checks and maintenance

6.2 Top cover thread tension adjustment

In the standard position, the top surface to the arm and the top surface of the top cover thread take-up eyelet ① is 20 mm apart. Loosen the screw ② to adjust the top cover thread take-up eyelet ①. Once the eyelet has been positioned, tighten the screw ②.

- To decrease take-up amount, lower the top cover thread take-up eyelet.
- To increase take-up amount, raise the top cover thread take-up eyelet.

* When using wooly thread or other stretchable thread as the top cover thread, lower the top cover thread take-up eyelet ①.



⚠ CAUTION

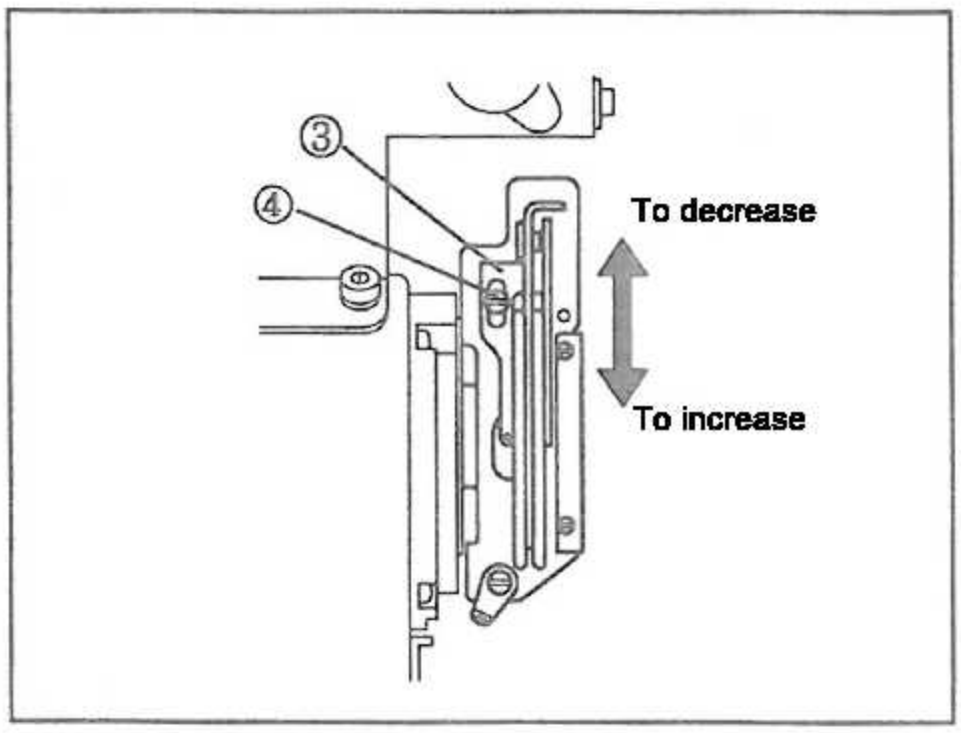
Please use lower threading holes for threading stretchable (nylon) threads.

6.3 Looper thread tension adjustment

6.3.1 Thread take-up eyelet adjustment

The thread take-up eyelet ③ is in the standard position when the screw ④ is at the center of the slot. Loosen the screw ④ to adjust the thread take-up eyelet ③. Once the eyelet has been positioned, tighten the screw ④.

- To decrease take-up amount, raise the thread take-up eyelet.
- To increase take-up amount, lower the thread take-up eyelet.

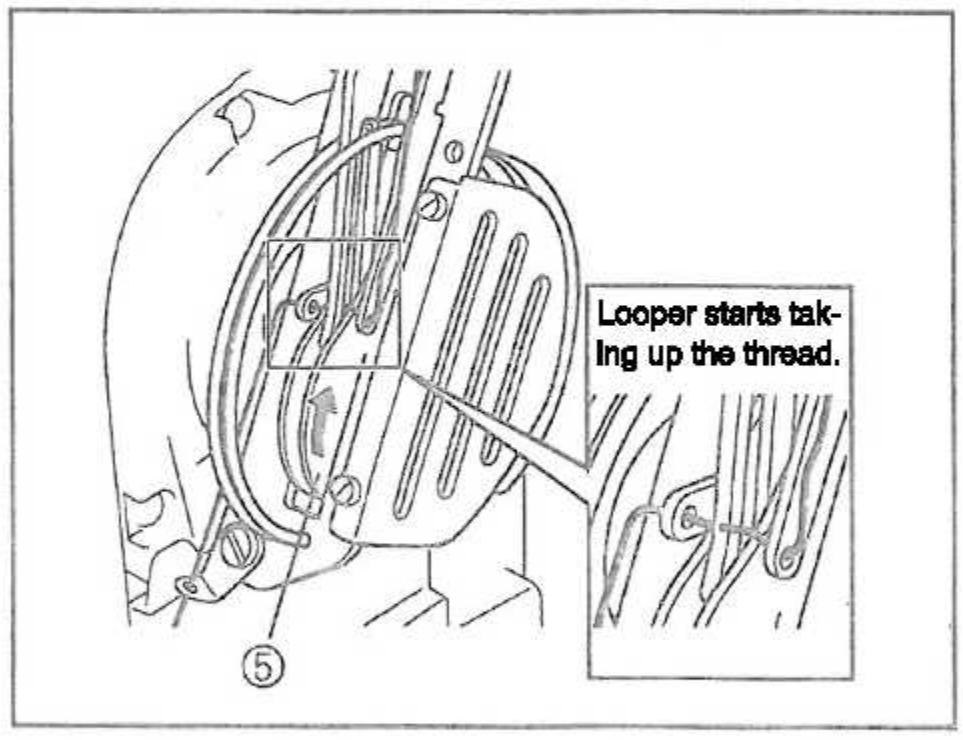


⚠ CAUTION

Too loose a tension for looper thread can causing skip stitches.

6.3.2 Looper thread take-up adjustment

When the needle bar is at the highest point, move the looper thread take-up ⑤ to a position where the looper starts taking up the thread.



6. Checks and maintenance

6.4 Needle and spreader adjustment

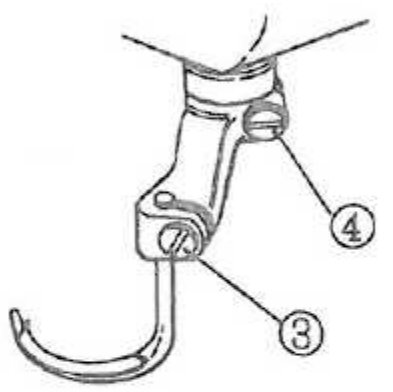
6.4.1 Spreader adjustment

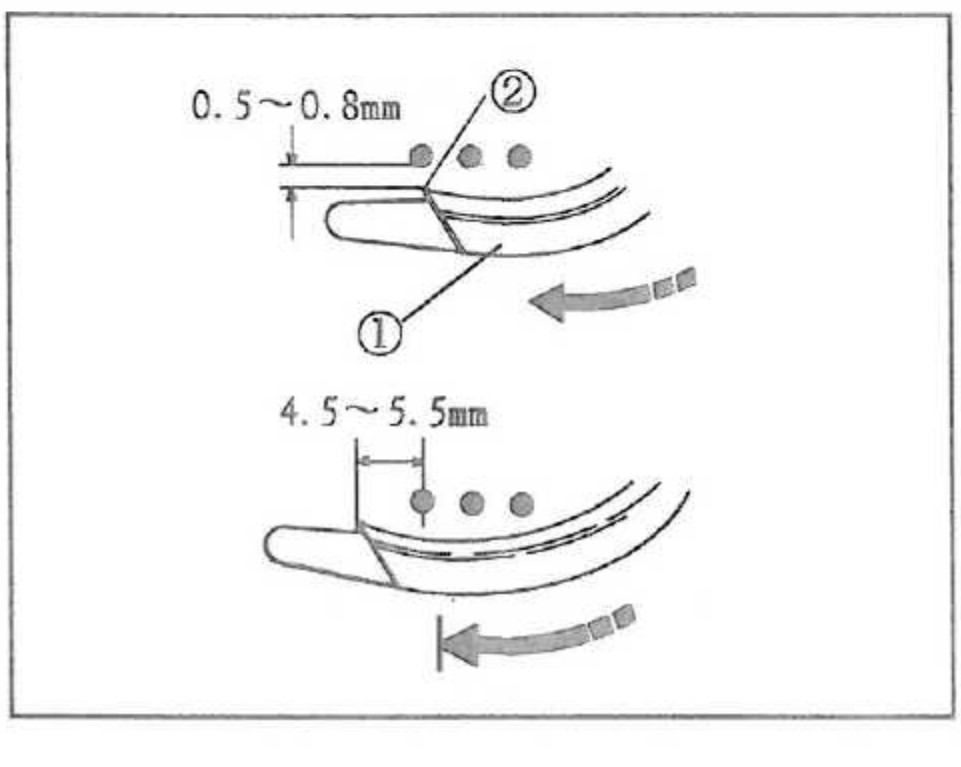
(1) Loosen the screw ③ of the spreader and the screw ④ of the spring holder.

(2) Adjust the spreader ① so that the clearance between the left needle and the hook ② of the spreader ① is 0.5 - 0.8 mm.

(3) Adjust the spreader ① so that the distance from the center of the left needle to the hook ② is 4.5 - 5.5 mm when the spreader ① is to the farthest left. Then, tighten the screw ④.

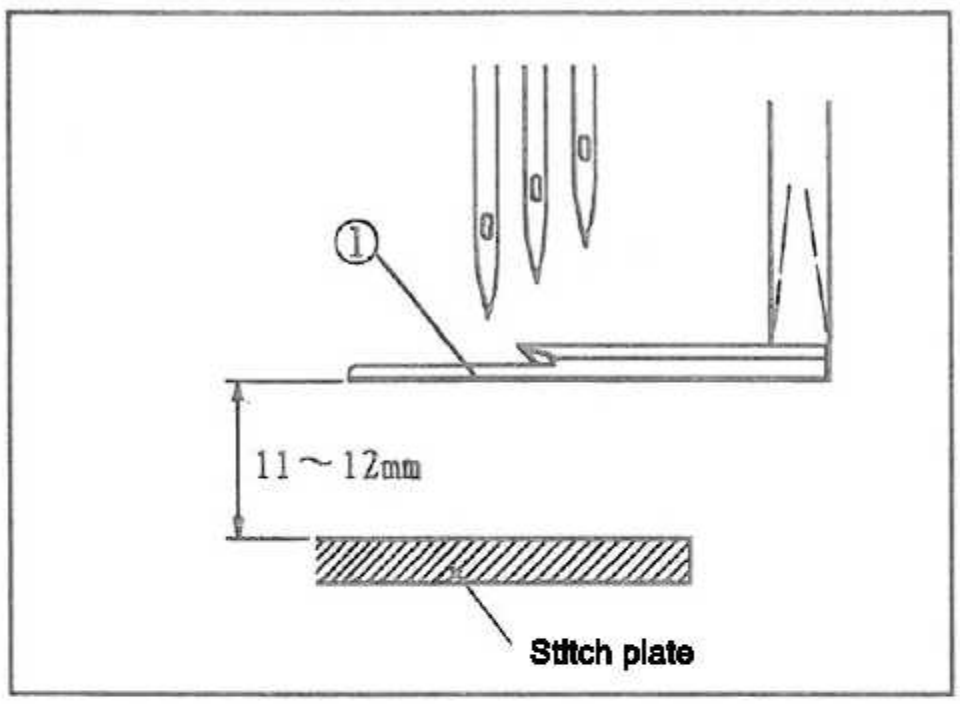
(4) Adjust the spreader ① so that the distance from the top surface of the stitch plate to the bottom surface of the spreader ① is 11 - 12 mm. Then, tighten the screw ③.





SUPPLEMENT

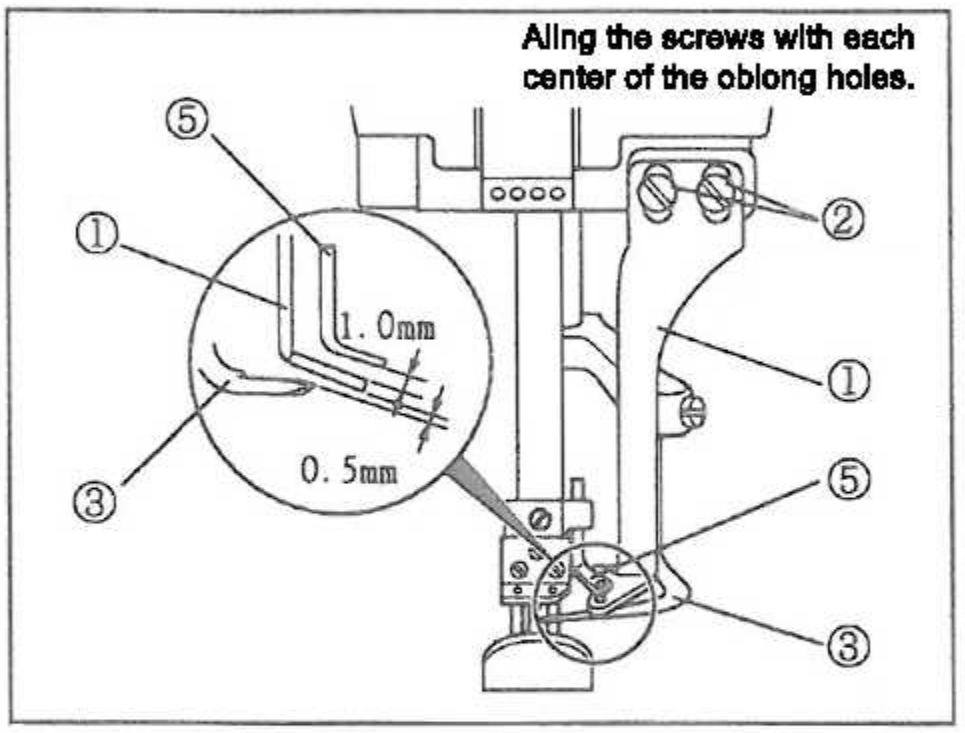
Match the height of the spreader ① to the needle distance within the adjustment range, so that the top cover thread passes behind the right needle and is caught by the left needle.



6. Checks and maintenance

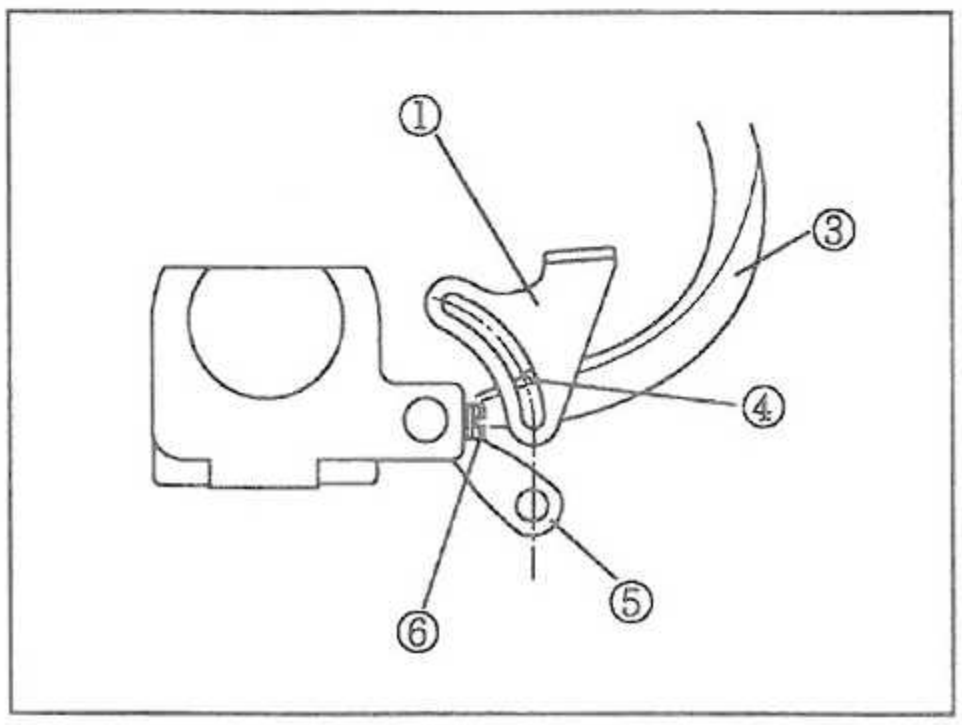
6.4.2 Top cover thread guide adjustment

(1) Loosen the screw ② of the top cover thread guide ①.
(2) Adjust the top cover thread guide ① so that the clearance between the top surface of the spreader ③ and the bottom surface of the top cover thread guide ① is 0.5 mm.
(3) Adjust the spreader ③ so that the hook ④ is at the center of the slot on the top cover thread guide ① when the spreader ③ is to the farthest right. Then, tighten the screw ②.



6.4.3 Top cover thread eyelet adjustment

(1) Loosen the screw ⑥ of the top cover thread eyelet ⑤.
(2) Adjust the top cover thread eyelet ⑤ so that the clearance between the top surface of the top cover thread guide ① and the top cover thread eyelet ⑤ is 1.0 mm when the needle bar is at the lowest point.
(3) Align the hole of the top cover thread eyelet ⑤ as an extension of the slot on the top cover thread guide ①.
(4) Tighten the screw ⑥.



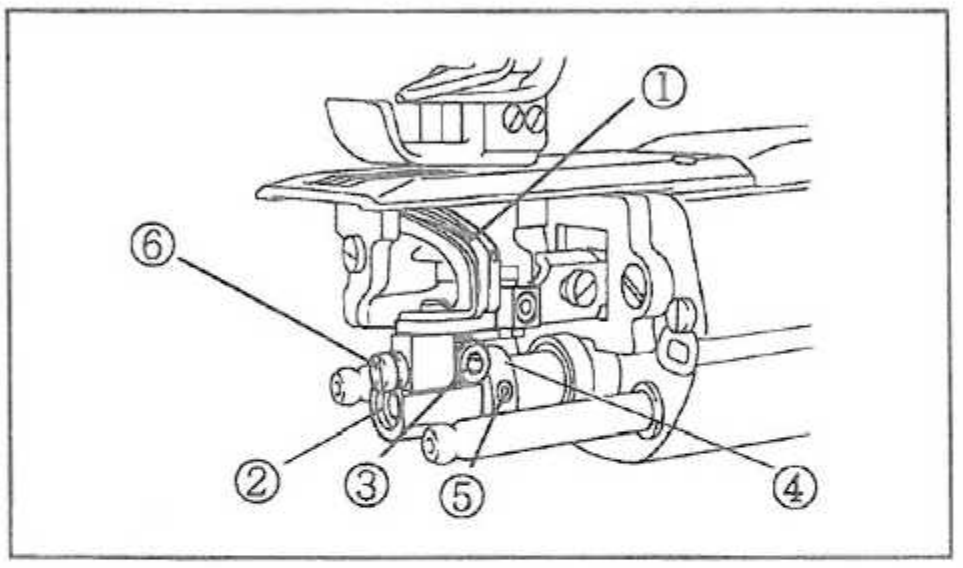
6. Checks and maintenance

6.5 Needle and looper adjustment

6.5.1 Looper's distance adjustment

The looper's distance (L) from the tip of the looper ① to the center of the right needle when the needle is at the lowest point and the looper ① is to the farthest right varies depending on needle distance. Adjust looper's distance as shown in Table 6.

Loosen the screw ③ of the looper holder ② and the screw ⑤ on the looper holder collar ④. Then, position the looper ① . Once the looper has been positioned, tighten the screws ③ ⑤.



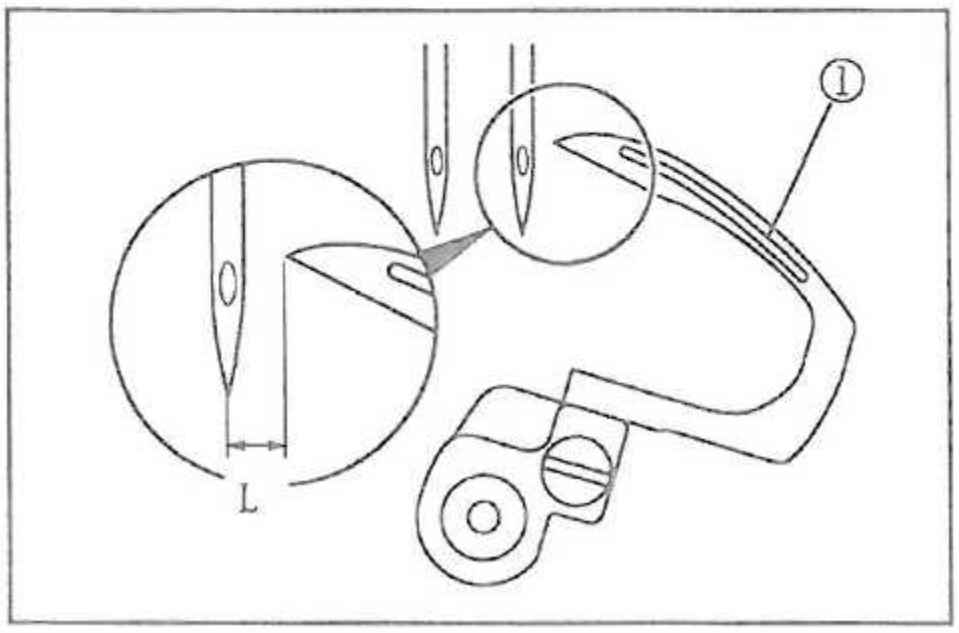


Table 6

Needle distance(Code)	Looper's distance(L)
3.2mm(32)	4.6~4.8mm
4.0mm(40)	4.2~4.4mm
4.8mm(48)	3.8~4.0mm
5.6mm(56)	3.4~3.6mm
6.4mm(64)	3.0~3.2mm

SUPPLEMENT

Even with differing needle distance, the distance from the center of the needle bar to the tip of the looper ① is 6.2-6.4 mm.

6.5.2 Looper angle and height adjustment

Insert the looper ① to the end of the looper holder ② and tighten the screw ⑥.

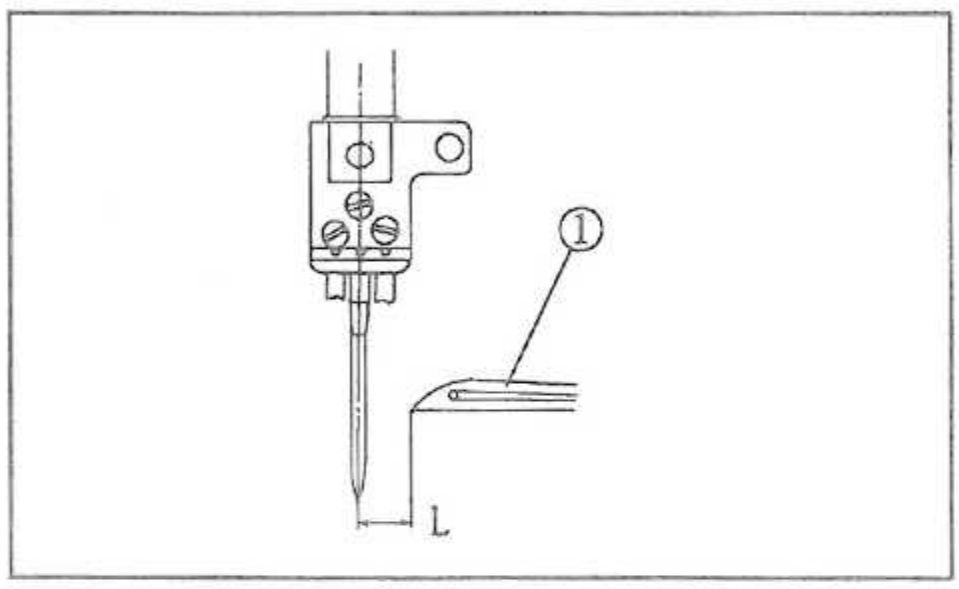
Looper height and looper installation angle(2°) are fixed.

6.5.3 Looper front-and-rear position adjustment

(1) Turn the machine pulley until the tip of the looper ① comes to the center of the left needle ⑦.

(2) Loosen the screws ③ ⑤ to adjust the looper holder ② together with the looper holder collar ④ so that the clearance between the backside of the left needle ⑦ and the tip of the looper ① is 0.2 -0.3 mm.

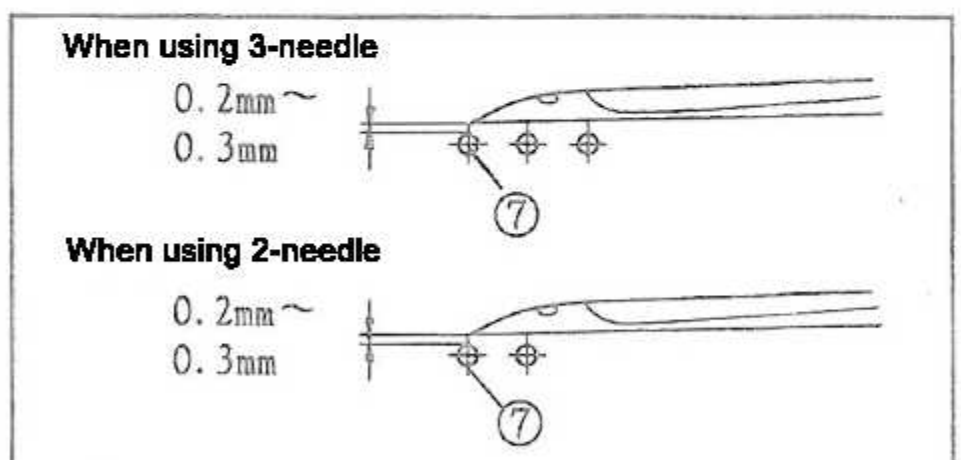
(3) Tighten the screws ③ ⑤.



SUPPLEMENT

Removing a set of the looper ① and the looper holder ② will be easily reset.

Fit the pin of the looper holder collar ④ into the hole of the looper holder ②, press the parts together and tighten the screw ③ on the looper holder ④. Then, check the clearance between the needle and the looper ①.



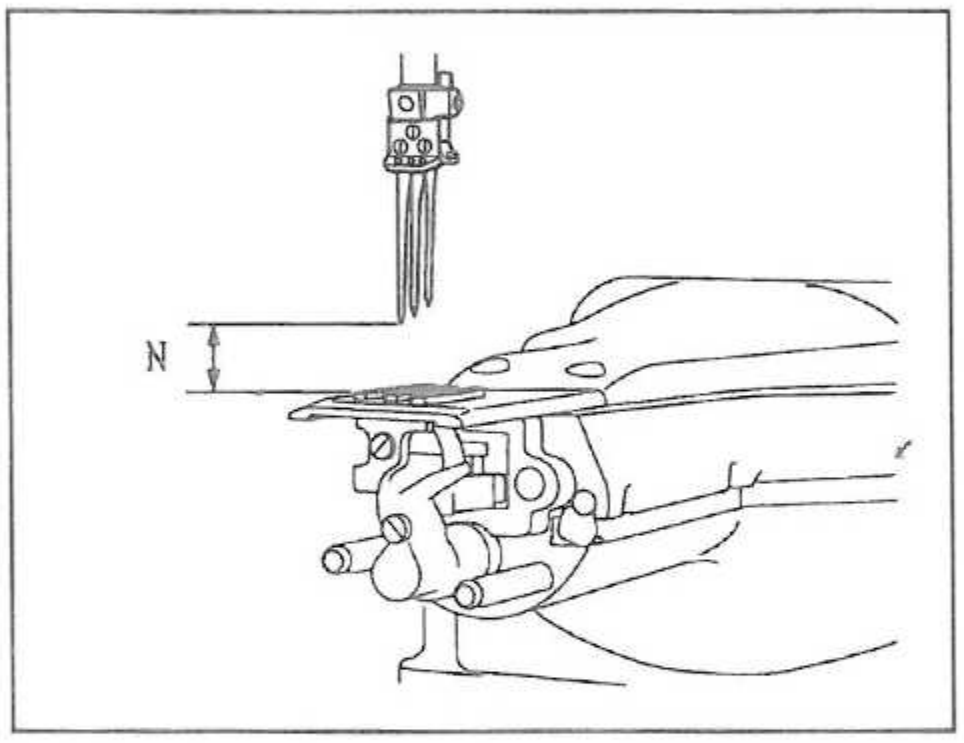
CAUTION

- **Press the looper holder ② and looper holder collar ④ together. If the needle and looper ① contact one another, they may break.**
- **When tightening the screw ③, the looper ① may move in the front-and-rear position. After tightening the screw ③, recheck the front-and-rear position of the looper ①.**

6. Checks and maintenance

6.5.4 Needle height adjustment

(1) Set the needle in the left needle installation hole of the needle clamp.
(2) Remove the screws ①.
(3) Loosen the screw ② of the needle bar bracket and adjust the needle bar in the vertical direction so that the tip of the left needle is the height(N) given in Table 7 from the stitch plate top surface.
This height varies depending on needle distance.
(4) Check the needle drops in the center of the needle hole on the stitch plate, then tighten the screw ② of the needle bar bracket.
(5) Retighten the screws ①.



⚠ CAUTION

Before retightening the screw ①, wipe the old gasket clean and coat with liquid gasket. Dirt can cause oil leakage.

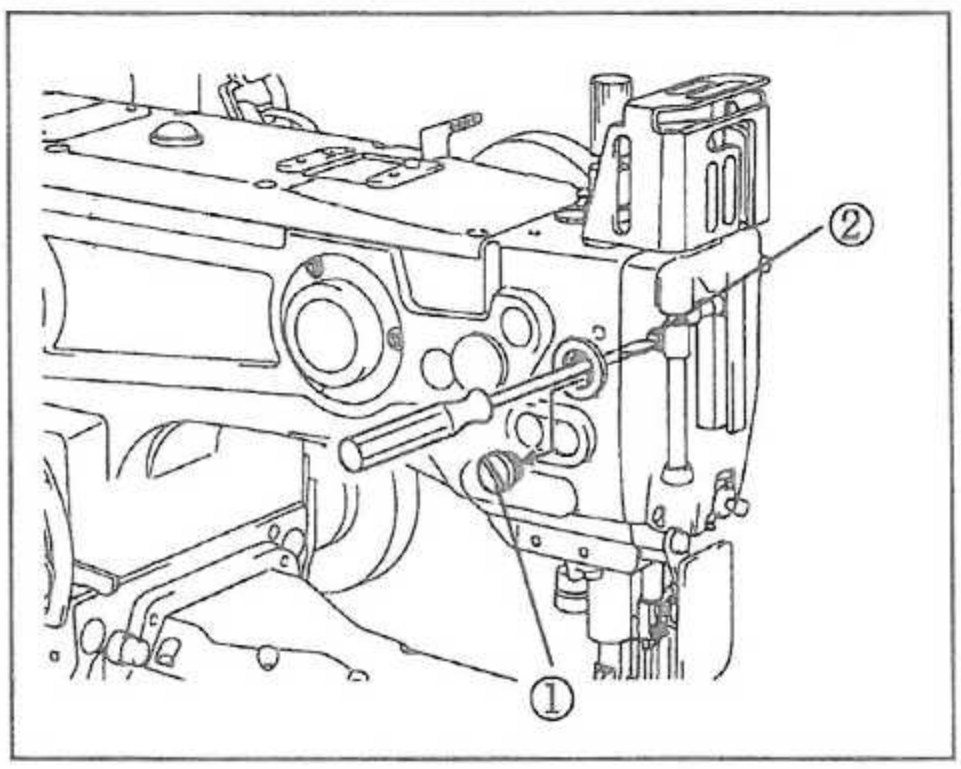
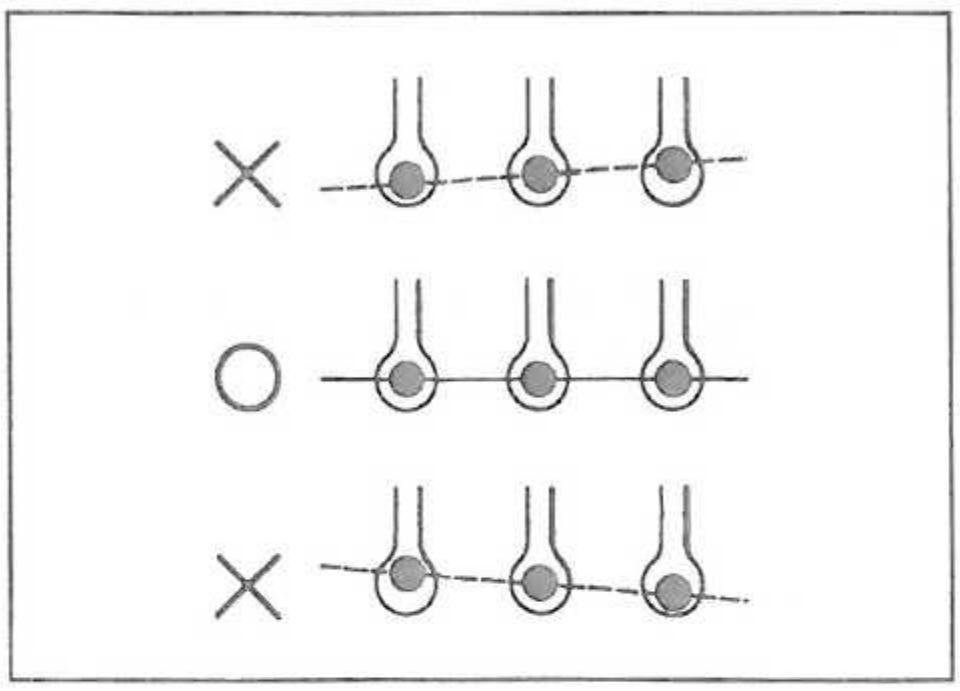


Table 7

Needle distance	Code	Left needle height(N)
3.2mm	32	11.8~12.0mm
4.0mm	40	11.5~11.7mm
4.8mm	48	11.2~11.4mm
5.6mm	56	10.9~11.1mm
6.4mm	64	10.6~10.8mm

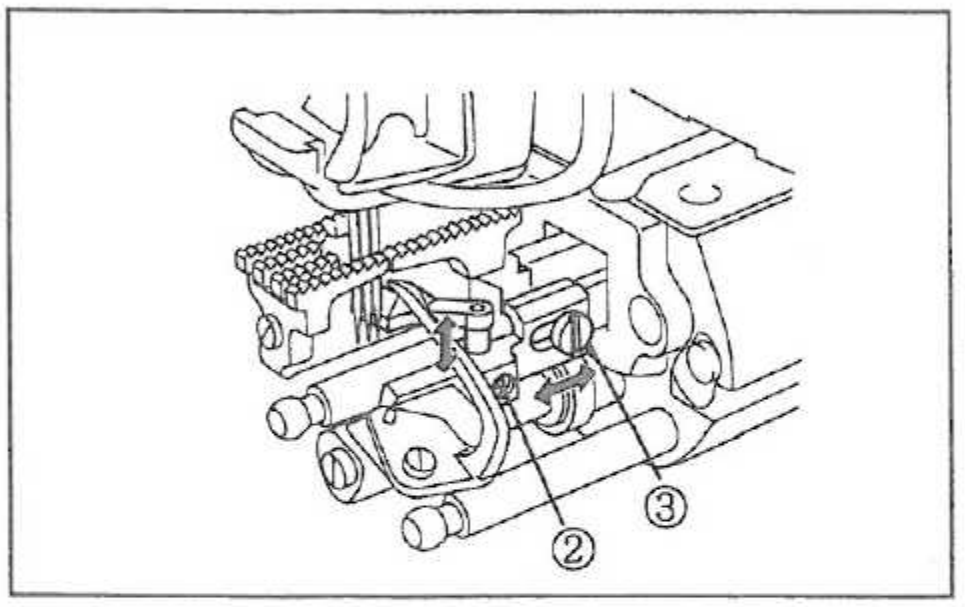


6. Checks and maintenance

6.6 Needle guard(rear) adjustment

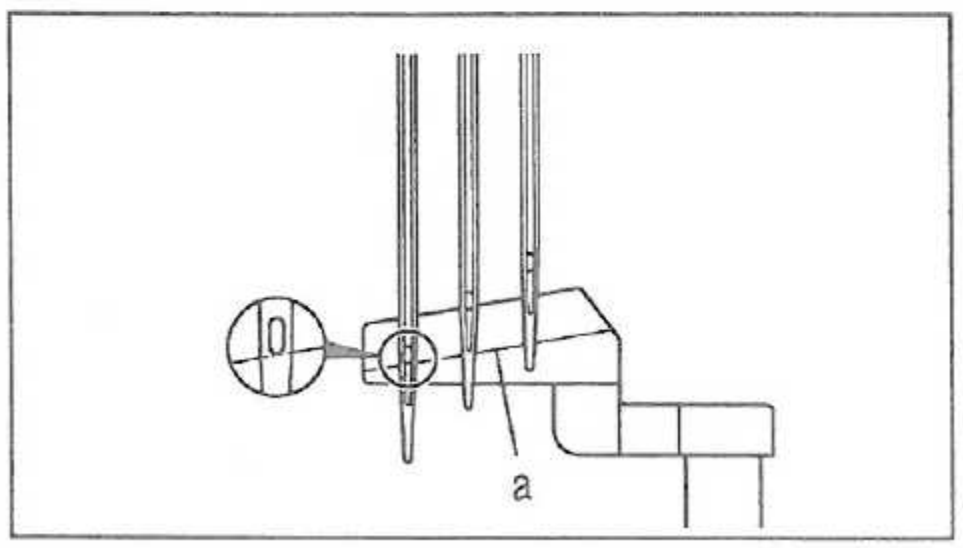
6.6.1 Needle guard(rear) height adjustment

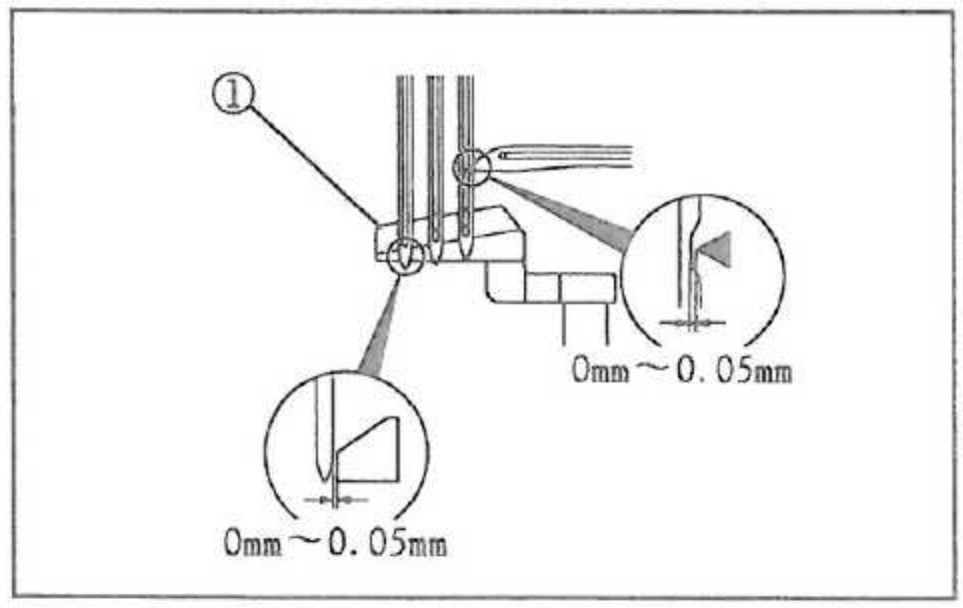
(1) Loosen the screws ②.
(2) Set the ridge line "a" of the needle guard(rear) ① to the same height as the bottom of the left needle eye when the looper is at the center of the right needle.
(3) Tighten the screw ③.



6.6.2 Needle guard(rear) front-and-rear position adjustment

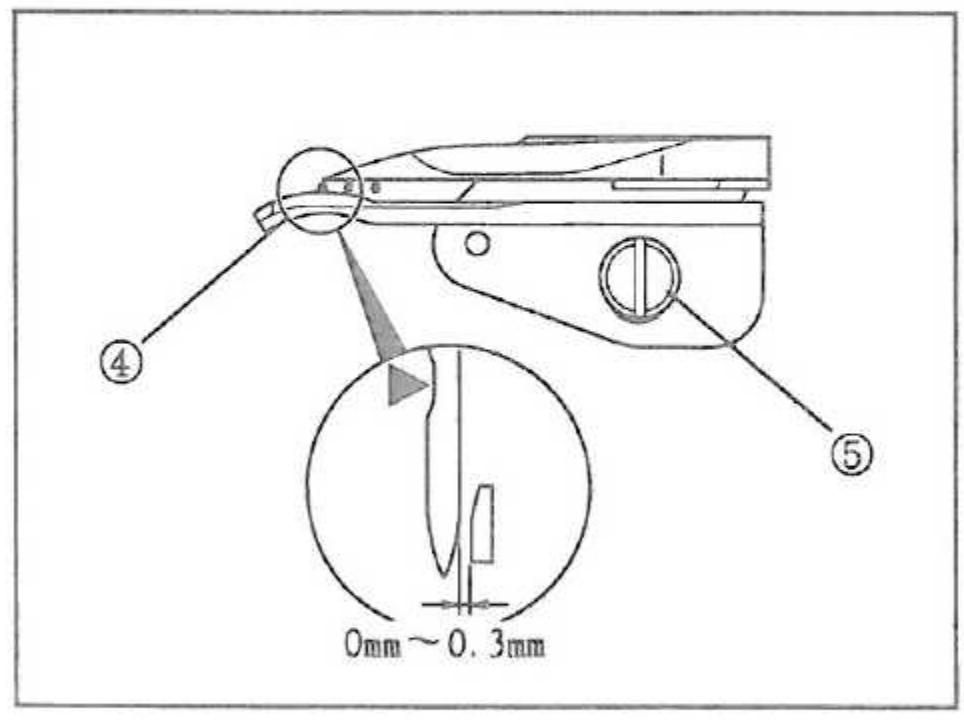
(1) Loosen the screws ② ③.
(2) When the looper tip is at the center of the right needle, the looper pushes the right needle, therefore push the right needle with the needle guard(rear) ① so that the clearance between the needle and the looper is 0 - 0.05 mm. Also at this time, adjust the angle and front-and-rear position of the needle guard(rear) so that the clearance between the left needle and the needle guard(rear) ① is 0 - 0.05 mm.
(3) Check that the middle and left needles start contacting the needle guard(rear) at a point below the needle eye.
(4) Tighten the screws ② ③.





6.7 Needle guard(front) adjustment

(1) Loosen the screw ⑤ and position the needle guard(front) ④ so that the clearance between it and each needle is 0 - 0.3 mm when the looper tip is at the center of the left needle.
(2) Tighten the screw ⑤.

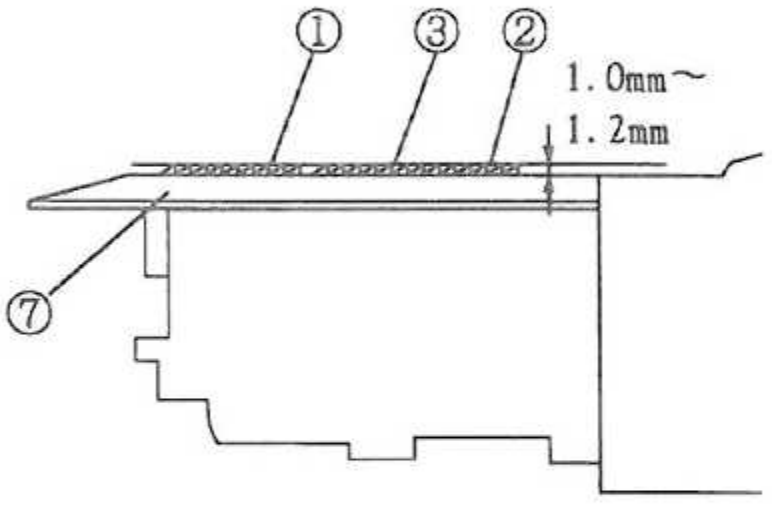


6. Checks and maintenance

6.8 Feed dog height adjustment

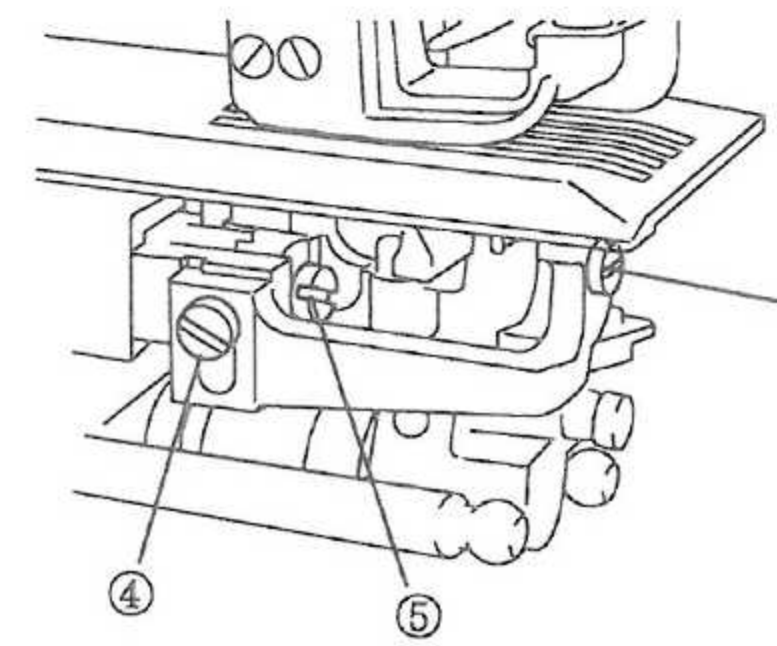
6.8.1 Standard position

When the feed dog is at the hightest point, the tail end of the main feed dog ② is 1.0 -1.2 mm from the top surface of the stitch plate. When the feed dog rises to the same height as the top surface of the stitch plate ⑦, the differential feed dog ① and the main feed dog ② are parallel to the stitch plate ⑦. Set the differential feed dog ①, middle feed dog ③ and main feed dog ② to the same height.



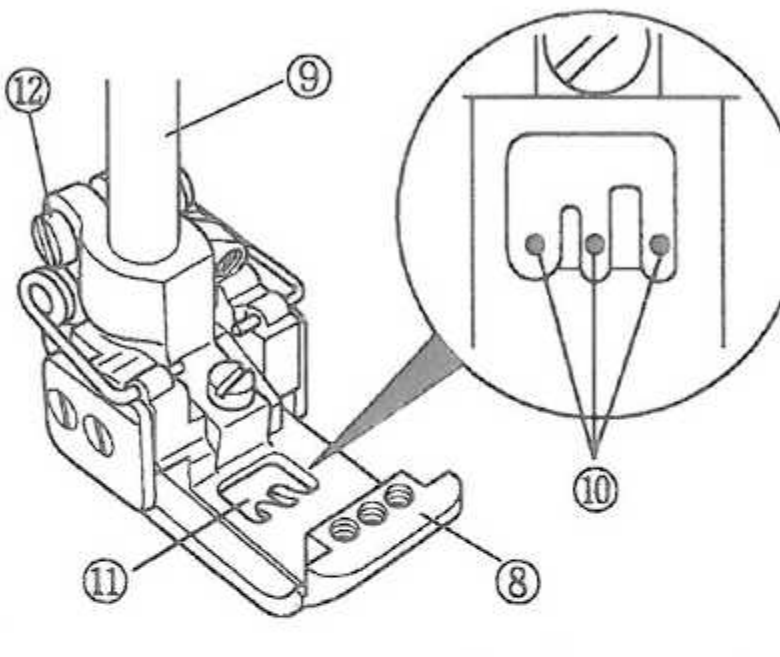
6.8.2 Adjustment

Loosen the screws ④ of the differential feed dog ①, the screw ⑤ of the main feed dog ② and the screw ⑥ of the middle feed dog ③, and position the feed dogs. Once the feed dogs have been positioned, tighten the screws ④ ⑤ ⑥.



6.9 Presser foot position adjustment

Correctly set the presser foot ⑧ on the presser bar ⑨ and position the presser foot so that the needles ⑩ drop in the center of the needle hole ⑪. Loosen the screw ⑫ on the presser foot ⑧ and turn the presser foot ⑧ to the left and right until the needles ⑩ drop in the center of the needle hole ⑪ on the presser foot ⑧.



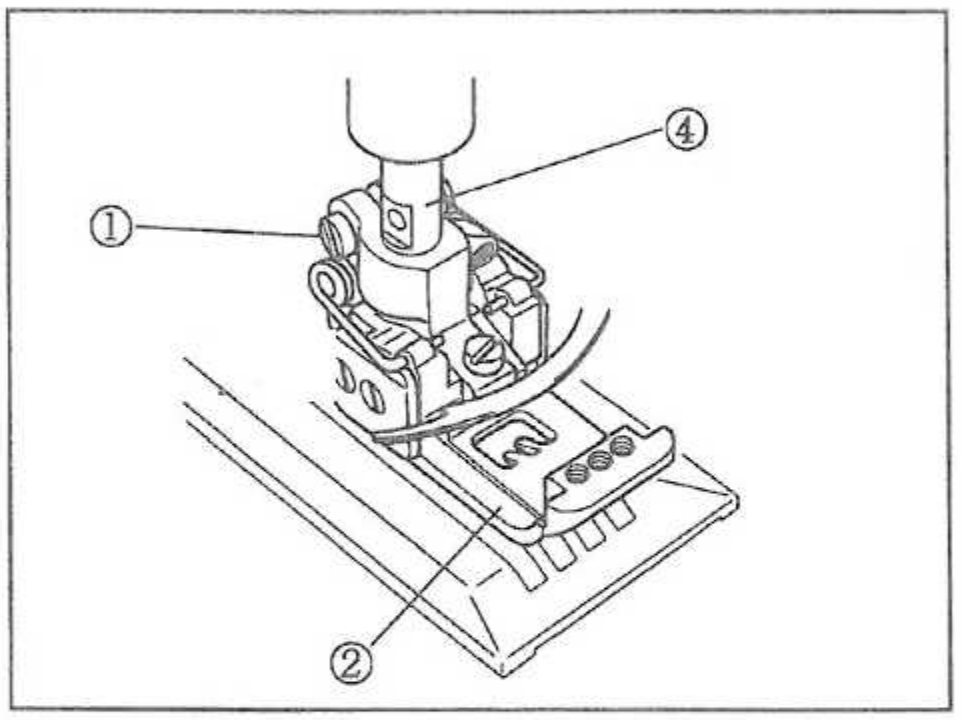
6. Checks and maintenance

6.10 Removeing and resetting presser foot

6.10.1 How to remove

(1) Loosen the screws ①.

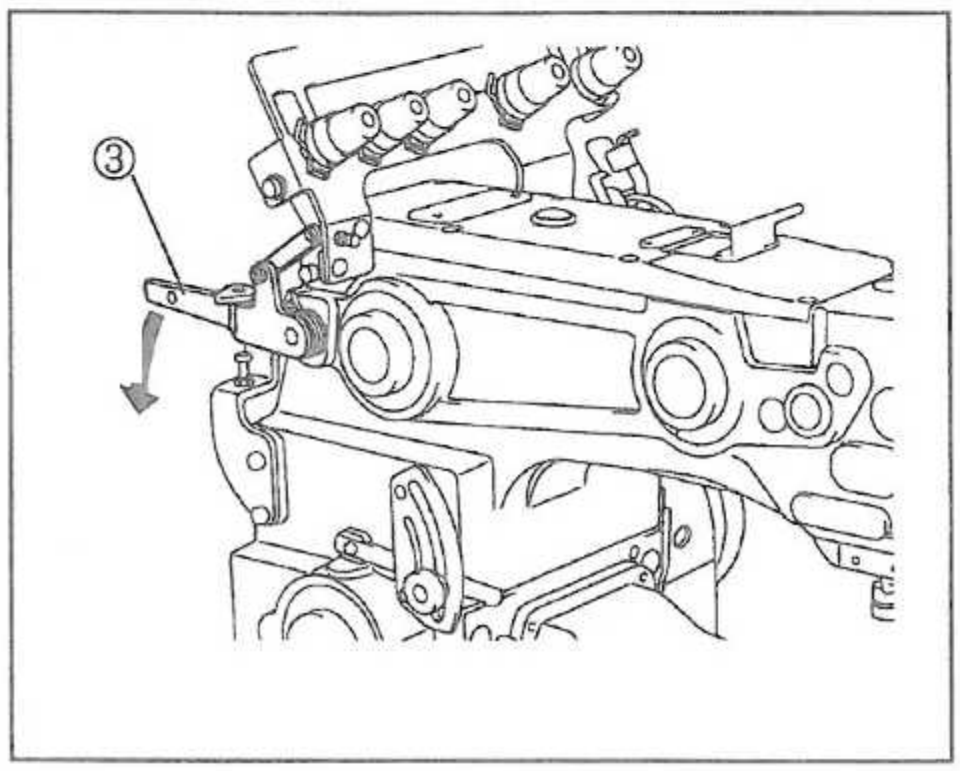
(2) Press the lifter lever ③ downward and remove the presser foot ②.



6.10.2 How to reset

(1) Press the lifter lever ③ downward until inserting the presser foot ② into the presser bar ④.

(2) Position the presser foot ② as explained in "6.9 presser foot position adjustment"(page 25), and tighten the screw ①.

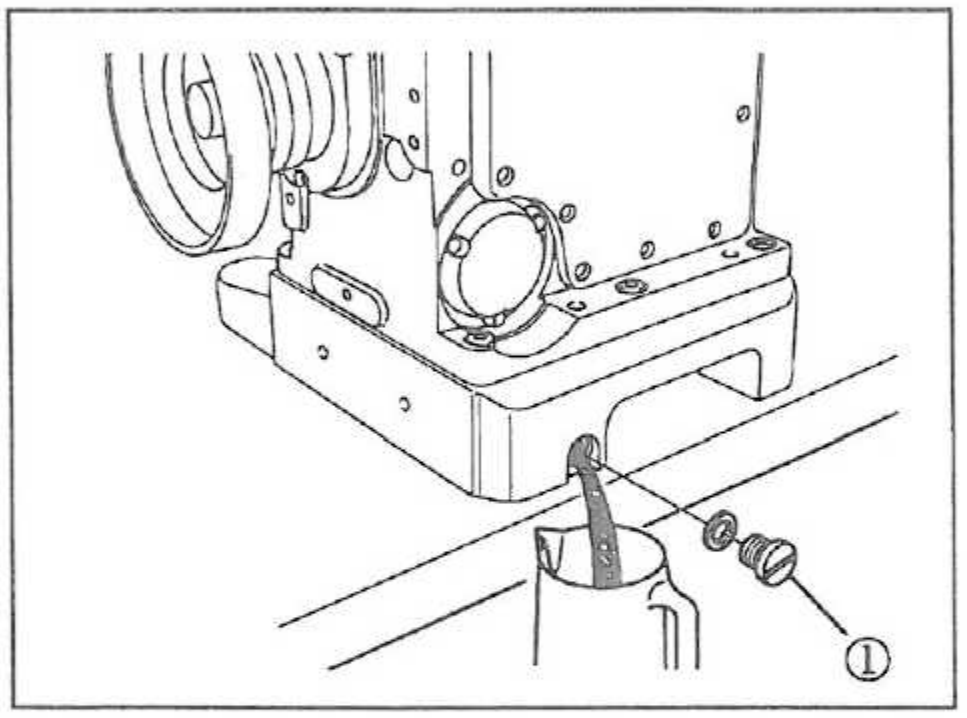


6. Checks and maintenance

6.11 Changing the oil

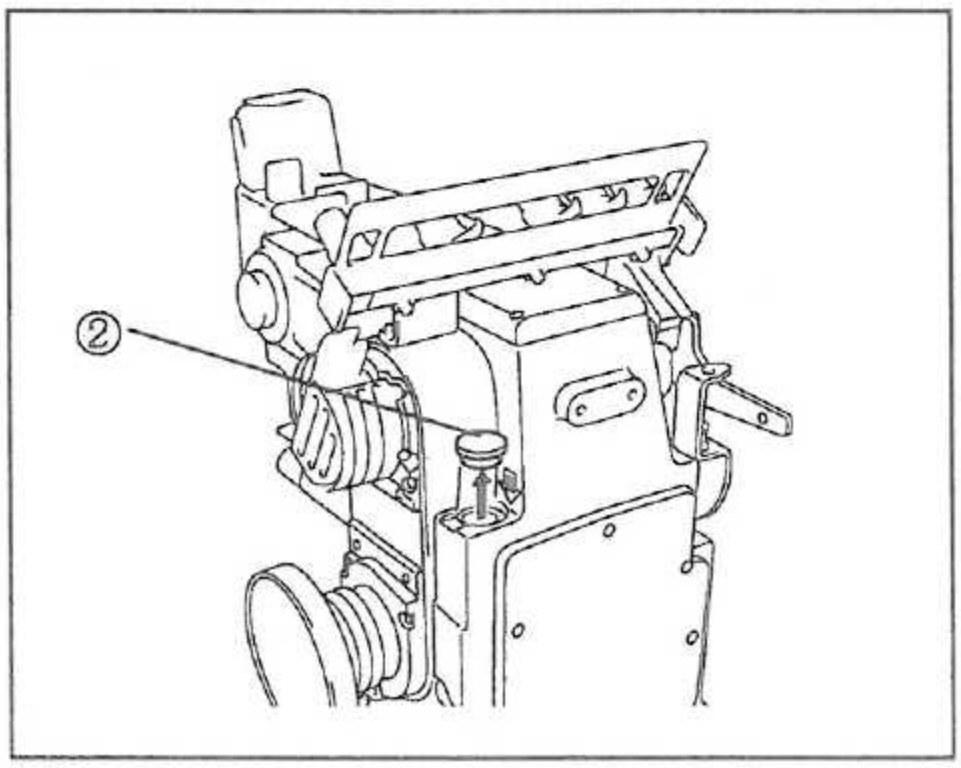
6.11.1 Oil changing interval

With a new sewing machine, change the lubricating oil after about 200 hours (approx. 1 month) of use. After that, change the oil once or twice a year.



6.11.2 How to change

(1) Remove the belt cover.(See page 6)
(2) Remove the V-belt from the sewing machine.
(See page 5)
(3) Remove the sewing machine from the machine table.
(4) Set a container for catching the oil underneath the drain hole.
(5) Remove the drain hole screw ①.
The oil is drained.



⚠ CAUTION

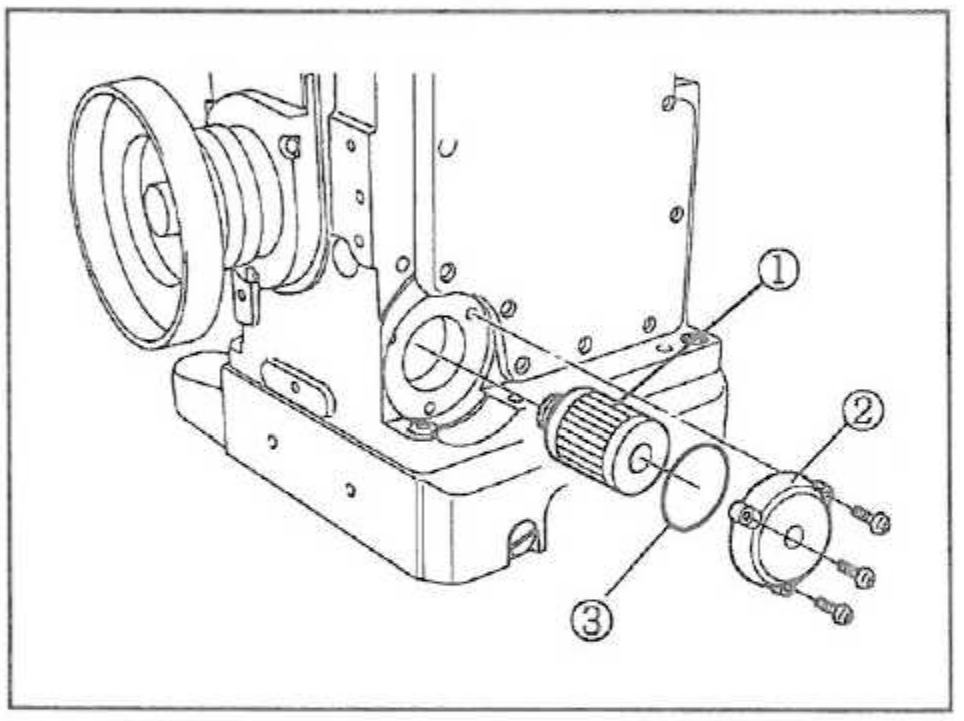
Be careful not to get oil on the V-belt or machine pulley.

(6) Reset the drain hole screw ①.
(7) Remove the seal plug ② labled "OIL".
(8) Change new oil. (See page 10.)
(9) Set the sewing machine on the machine table.
(5) Hang the V-belt around the motor pulley and reset the belt cover. (See page 5 and 6.)

6. Checks and maintenance

6.12 Oil filter check and replacement

Oil is not properly supplied if the oil filter ① becomes clogged with dirt. Check the filter for clogging and breakage every 6 months.
If very little oil is sprayed from the nozzle despite a sufficient charge of oil or if there are many bubbles in the oil, check and replace the oil filter.



6.12.1 How to check and replace

Remove the oil filter cap ②, pull out the O-ring ③ and the oil filter ①, and check the oil filter.
If the oil filter ① is clogged with dirt, clean or replace with a new filter.
If the oil filter ① is broken, replace with a new filter.

⚠ CAUTION

- **When removing the oil filter cap ②, oil in the oil filter ① may spill out.**
- **Insert the oil filter ① completely to rear to install properly.**

7. Troubleshooting

Trouble	Check item	Remedial action	Ref. page
Skip stitch	Is the thread wrongly threaded?	String the thread properly.	12
	Is the needle bent or the tip broken?	Replace the needle.	11
	Is the thread too tightened?	Loosen the thread at the tension unit.	13
	Are the timing and clearances of the needles, looper and needle guards correct?	Correct the timing and clearances of the needles, looper and needle guards.	20~24
	Is the needle too thin for the thread?	Either replace the needle or the thread with the proper size.	11
	Is the needle wrongly attached (direction or insertion depth)?	Attach the needle correctly.	11
Thread breakge	Is the thread caught on the eyelet?	Remove the caught thread.	
	Is the thread wrongly threaded?	String the thread properly.	12
	Is the thread too tightened?	Loosen the thread at the tension unit.	13
	Is the needle too thick for the thread?	Either replace the needle or the thread with the proper size.	11
	Is the thread good quality?	Use a good quality thread.	
	Did the thread beak under hea?	Use the SP device.	15
	Is thread damaged by eyelet, looper tension, etc?	Either replair the damage or replace with a new part.	
Needle breakge	Did the needle contact the looper?	Correct the clearances of the needles, looper and needle guards	22/24
Improper thread tension	Is the thread wrongly threaded?	String the thread properly.	12
	Are the needle threads and looper thread properly balanced?	Correct the balance at the tension unit.	
Uneven tension	Is the thread wrongly threaded?	String the thread properly.	12
	Are the needle threads and looper thread properly balanced?	Correct the balance at the tension unit.	
Oil does not come from nozzle	Is oil level below the line on the oil gauge?	Add oil	10
	Is the oil filter clogged?	Replace the oil filter	28

8. Specifications

Description	High speed feed-up-arm interlock machine
Dimebsions	430(L)mm x 284(W)mm x 360(H)mm
Cylinder circumference	160 mm
Weight	42 kg
Stitch type	ISO 406, 407, 602, 605
Application	Plain stitch, overlapped seam, hemming, and welt seam for knitted fabric
Sewing speed	Max. 4500 rpm(during intermittent operation)
Stitch length	Number of stitches (1.2 - 4 mm) 6 - 21 stitches/25.4 mm 7.5 - 25 stitches/30 mm
Needle system	UY x 128GAS ....#9 - #14(standard #10) (65 -90)
Needle distance	3-needle : 4.8, 5.6, 6.4 mm (2-needle : 3.2, 4.0 mm)
Needle stroke	31.5 mm
Presser foot lift	8 mm (with spreader)
Feed regulation	Pushbutton system
Differential ratio	Max. normal differential 1:2, Max. revers differential 1:0.8
Differential feed regulation	External lever
Lubrication	Automatic lubrication by trochoid-shaped pump
Lubricating oil	Kingtex oil
Capacity of oil reservoir	600 cc
Installation	Table top type

FT7000-0-356M
General Plain Seaming

VX1513-0-356M
HIGH SPEED FEED-UP-ARM INTERLOCK MACHINE

UH9005-353-M16
2-Needle, 5-Thread Safety Stitch Overlock
(General Plain Seaming)

KL500
High-Speed,Single-Needle Lockstitch Machines

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