GOLDEN WHEEL

No.000004

CS-441	1-NEEDLE, UNISON-FEED, SYLINDER BET.LOCK -STITCH MACHINE WITH SEMI-ROTARY LARGE CAPACITY SHUTTLE FOR EXTRA HEAVY-WEIGHT MATERIALS.

INSTRUCTION MANUAL

Please read this Instruction Manual carefully before using the unit in order to get the most out of it and to enjoy using it for a long time.
Please keep this Instruction Manual at hand taking care not to lose it.

BEFORE OPERATION

1.Do not operate the machine even for trial before lubrication it.
2.Confirm that the voltage and phase (single or 3-phase) are correct by checking them against the ratings showen on the motor nameplate.
3.When running your machine for the first time after the set-up, check the rotational direction of the handwheel. ★ Turn on the power switch. Run the machine at a low speed while checking the rotational direction of the handwheel. (The handwheel should turn counterclockwise as observed from the handwheel side.)
4.For the first month, run the machine at speed of 600 s.p.m. or less.

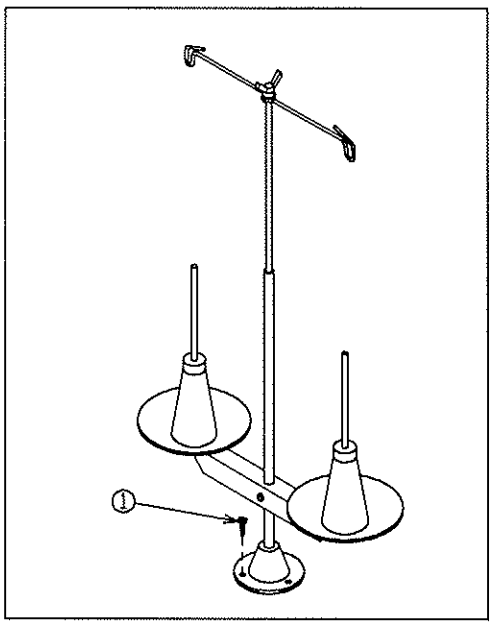
CAUTIONS IN OPERATION

1.Keep your hands away from the needle when you turn on the power switch or while the mac -hine is operating.
2.During operation, be careful not to allow your or any other person's head or fingers to come close the handwheel, V-belt, bobbin winder or motor. Also, do not place anything close to them.
3.Do not turn the machine with the finger guard, belt cover or any other protectors removed.
4.Be sure to turn off the power switch and confirm that the motor is completely stopped before removing the V-belt.

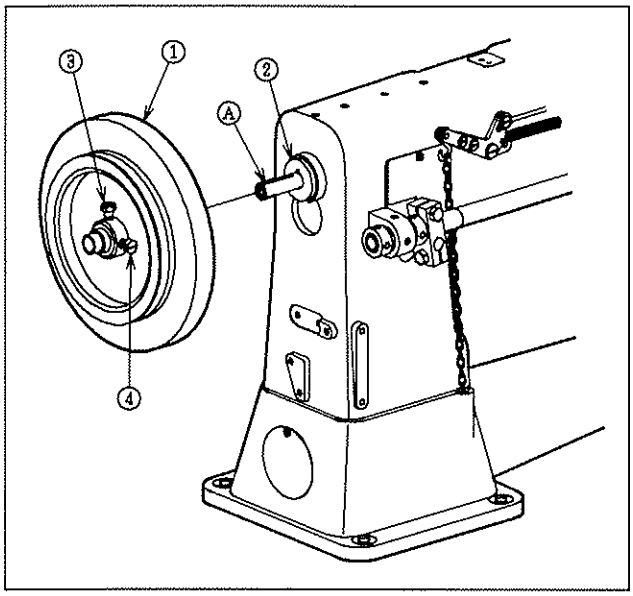
SPECIFICATIONS

Usage	Bags, Pouches, Bag handles, Shoes, Safety belts, etc.
Sewing speed	Max.800 s.p.m
Stitch length	Forward stitch:11mm, Reverse stitch:11mm
Needle	Nm130~Nm280 (Schmetz 794Nm230)
Lift of presser foot	Hand lifter:12 mm, Knee lifter:20mm
Lubricating oil	Machine oil (white spindle oil)

1. INSTALLING THE THREAD STAND



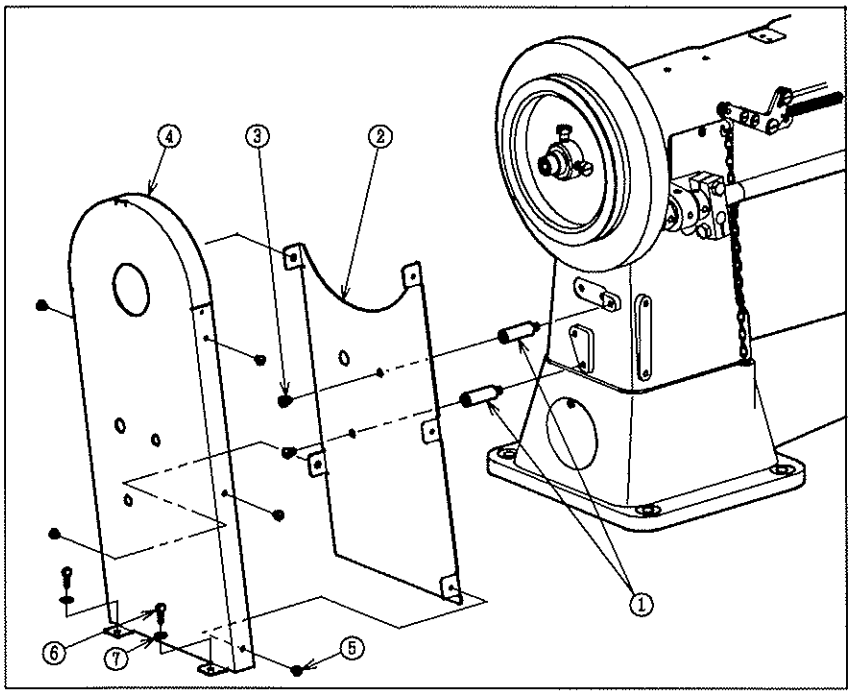
Assemble the thread stand, and install it to the right -hand side of the far side of the table with screws ① (at 3 places).



2. INSTALLING THE HANDWHEEL

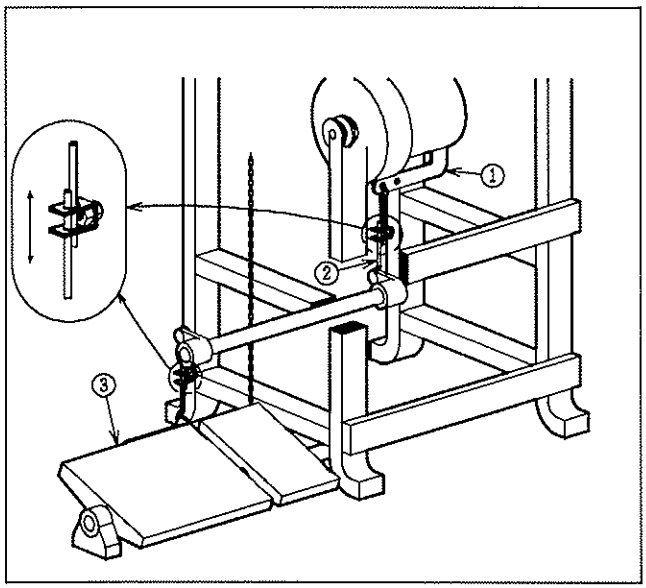
1) Fit handwheel ① close to the main shaft bushing, rear ②.
2) Align the handwheel with thread groove Ⓐ in the main shaft. Tighten the first screw ③ of the handwheel, then tighten screw ④.

3. INSTALLING THE BELT COVER



1) Install two belt cover supp -orts ① to the machine arm.
2) Install belt coverB ② to belt cover supports ① using screws ③.
3) Attach belt cover A ④ to belt cover B ② using screws ⑤.
4) Fix belt cover A ④ on the table using wooden screw ⑥ and washer ⑦.

4. ADJUSTING THE PEDAL



♦Installing the connecting rod

Install connecting rod ② in place so that connecting rod ② is at right angles to mot -tor control lever ①.
Connect the connecting rod with pedal adju sting plate ③ so that the rod is also at right angles to the pedal.

♦The angle of the pedal

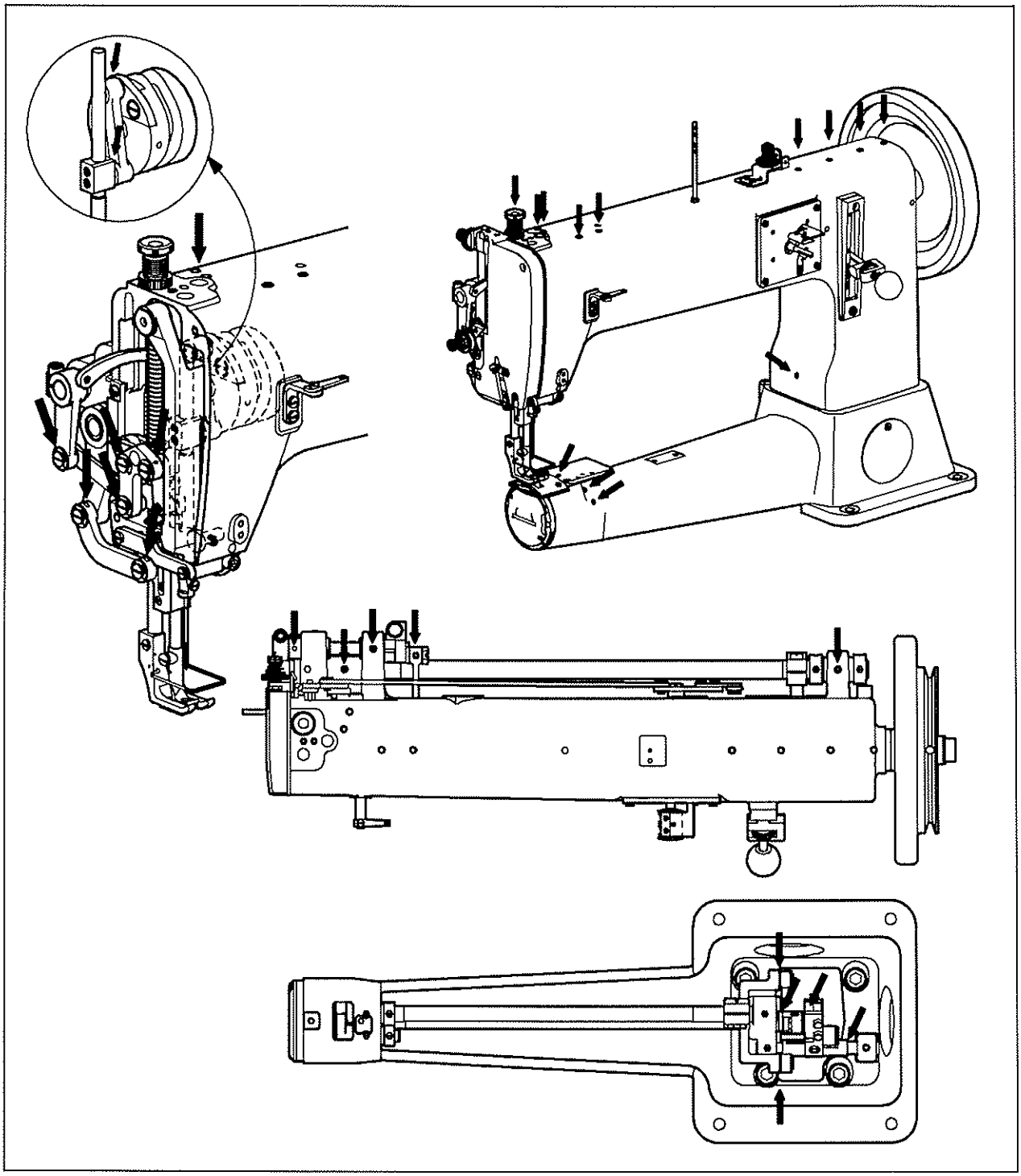
The tilt of the pedal can be changed freel -y by adjusting the length of the connecti -ng rod.
To change the tilt of the pedal, loosen the adjusting screw and advance or retract the connecting rod.

5. CLEANING

Waste thread, dust, dirt, etc., build-up around the feed dog or the shuttle may cause malfunctio-n of the machine.
Clean periodically according to your frequency of use.

1) Clean around the feed dog after removing the throat plate.
2) Clean the inside of the shuttle race body by taking out the shuttle body after removing the cover of the shuttle race body.

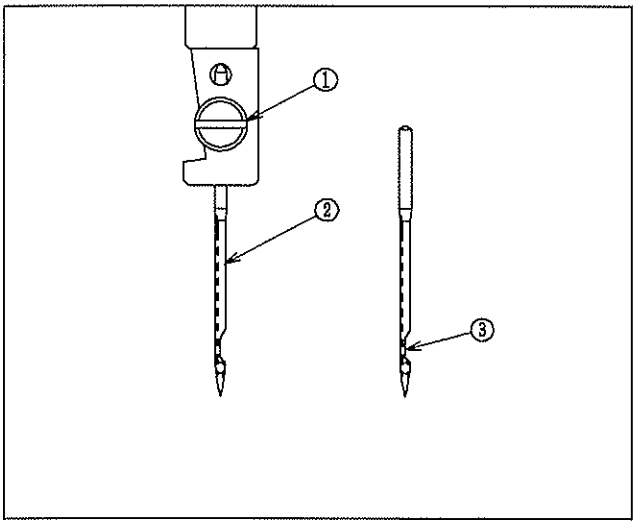
6. LUBRICATION



1) After uncrating, supply oil to the machine after cleaning it thoroughly.
2) When oiling all the sections requiring librication, after installation of the machine has been completed, wait for a while (approximately 10 minutes) so that oil can penetrate each section sufficiently before starting continuous operation.
3) To operating the machine continuously, apply two to three drops of oil to each section noted with an arrow mark in the following figure whenever starting operation in the morni-ing and in the afternoon.

7.HOW TO INSTALL THE NEEDLE

CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



♦BE SURE TO POWER-OFF THE MOTOR.

The normal needle system is a Schmetz 794, however an Organ DYx3 can be used.

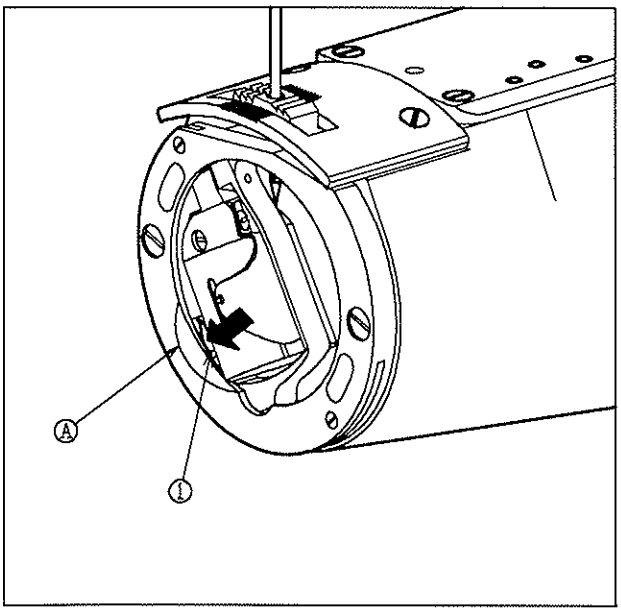
1) Turn the handwheel by hand and raise the needle bar to its top position.

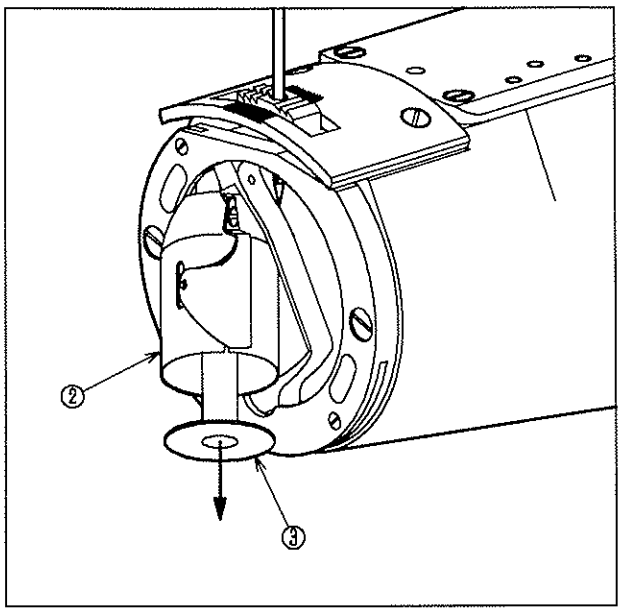
2) Loosen screw①and insert the needle②into the hole until it will go no further.
♦Insert the needle with its recess③facing directly to the right-hand side.

3) Securely tighten the screw in the needle.

8.HOW TO TAKE OUT THE BOBBIN

CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



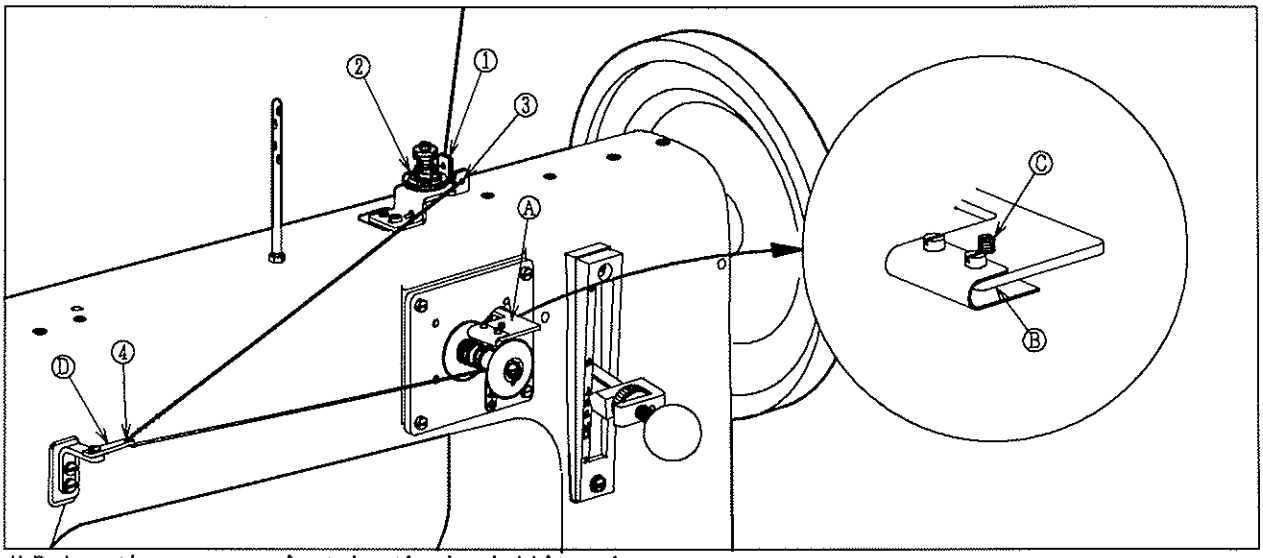


1) Turn the handwheel by hand(until the needle bar comes down to the lowest point of its stroke) so that case retaining spring ① in the shuttle body comes to recess Ⓐ in the cover of the shuttle race body.

2) When the case retaining spring is pressed, the bobbin case ② will be opened and the bobbin ③ will pop out of the case.

9.HOW TO WIND A BOBBIN THREAD

⚠CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



1) Raise the presser foot by the hand lifter lever.
2) Insert the bobbin into the bobbin winder spindle.
3) Thread the winder in the order illustrated and wind the thread onto the bobbin four or five turns.
4) Push the bobbin winder trip latch Ⓐ down and the bobbin starts rotating to wind bobbin thread with the machine operated.
5) When winding of bobbin thread has been completed, the bobbin winder trip latch will be disengaged and the bobbin will stop automatically.

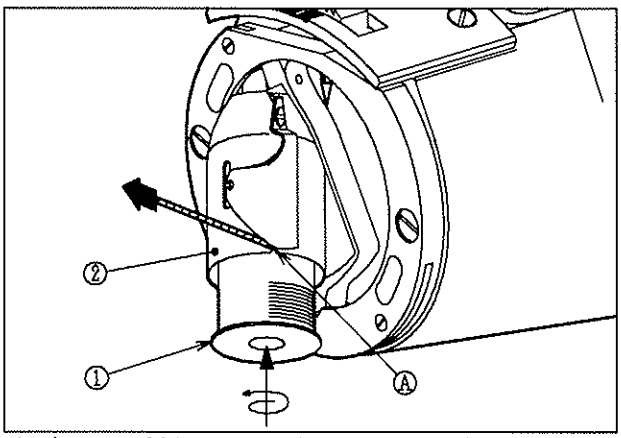
◆ Adjusting the amount of thread wound round the bobbin

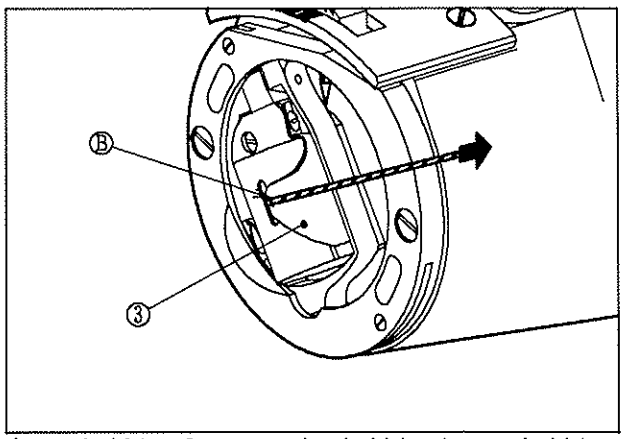
That amount of thread has already been adjusted so that thread can be wound round approxim -ately nine-tenths of the bobbin. If the amount is excessive or insufficient, adjust:

1) by loosening the adjusting screw nut Ⓑ.
2) by turning the adjustind screw Ⓒ. To decrease the amount, turn clockwise. To increase the amount, turn counterclockwise.
3) After adjusting the amount of thread has been completed, tighten the nut to secure firmly.

◆If bobbin thread is wound unevenly, move the bobbin winder thread guide Ⓓ forward and backward so that thread can be wound evenly.

10.HOW TO INSTALL THE BOBBIN





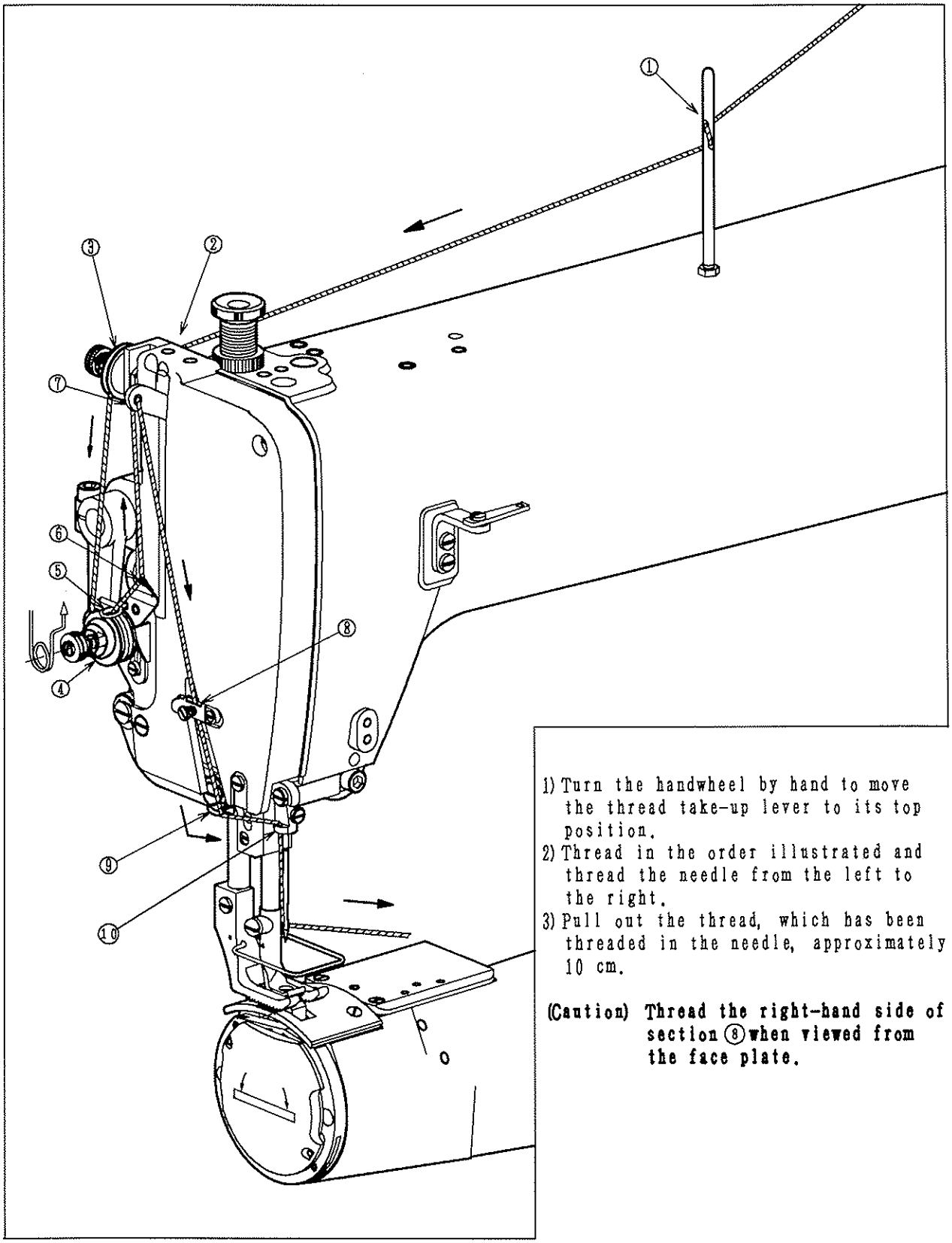
1) After pulling out thread approximately 10 cm from bobbin ①, put the bobbin into bobbin case ②.
2) Pass the thread through the threading groove Ⓐ in the bobbin case.

(Caution) Fit the bobbin in the bobbin case so that the bobbin turns in the direction of the arrow when the bobbin thread is pulled.

3) Pass the thread through thread slit Ⓑ and pull it up. Then the thread can be passed under the thread tension spring ③ and pulled out.
4) Push the bobbin case into the original position of holding the bobbin.

11. HOW TO THREAD THE MACHINE HEAD

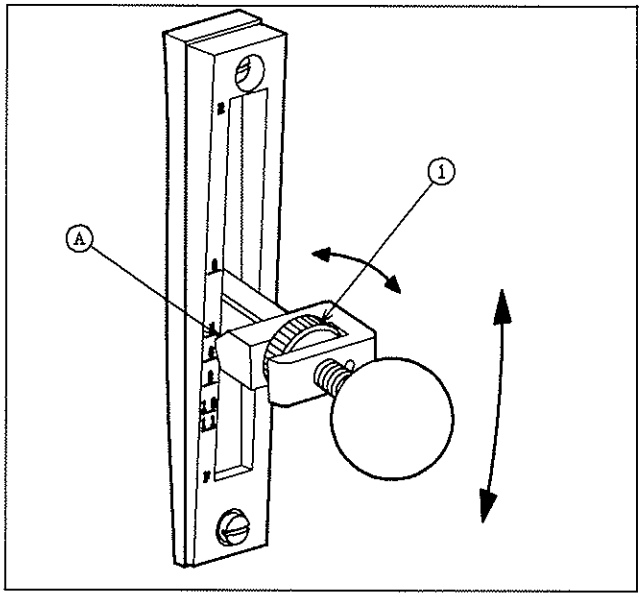
⚠ CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



1) Turn the handwheel by hand to move the thread take-up lever to its top position.
2) Thread in the order illustrated and thread the needle from the left to the right.
3) Pull out the thread, which has been threaded in the needle, approximately 10 cm.

(Caution) Thread the right-hand side of section ⑧ when viewed from the face plate.

12.ADJUSTING THE STITCH LENGTH AND REVERSE STITCHING



♦Adjusting the stitch length

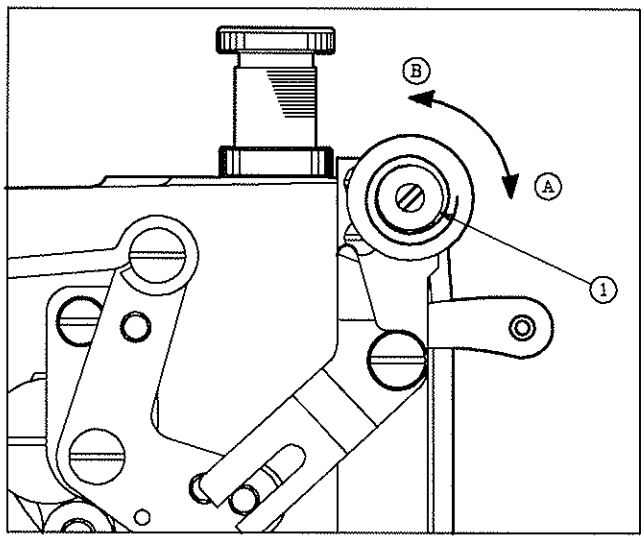
To adjusting the stitch length, use the feed regulator nut ①.
Align the upper end Ⓐ of the feed lever to the scale indicating the desired amount.
To increase the pitch, turn the nut counter -clockwise.
To decrease the pitch, turn the nut clockwi -se. (To decrease the stitch length, turn the nut while slightly pushing the feed lever down.)

♦Reverse stitching

To carry out reverse stitching, push the feed lever up by hand as far as it will go.
Reverse stitching can be done only when the feel lever is pushed up.

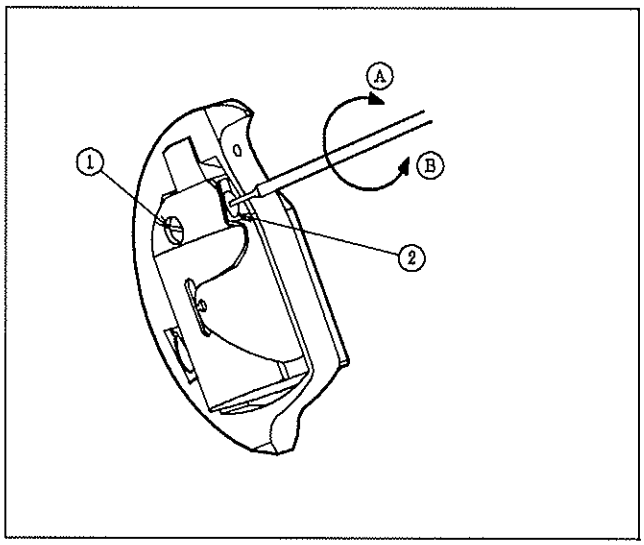
13.THREAD TENSION

⚠CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



♦Adjusting the needle thread tension

Adjust the needle thread tension by thread tension nut ①.
To increase the needle thread tension, turn the nut to the clockwise Ⓐ.
To decrease the needle thread tension, turn the nut to the counterclockwise Ⓑ.

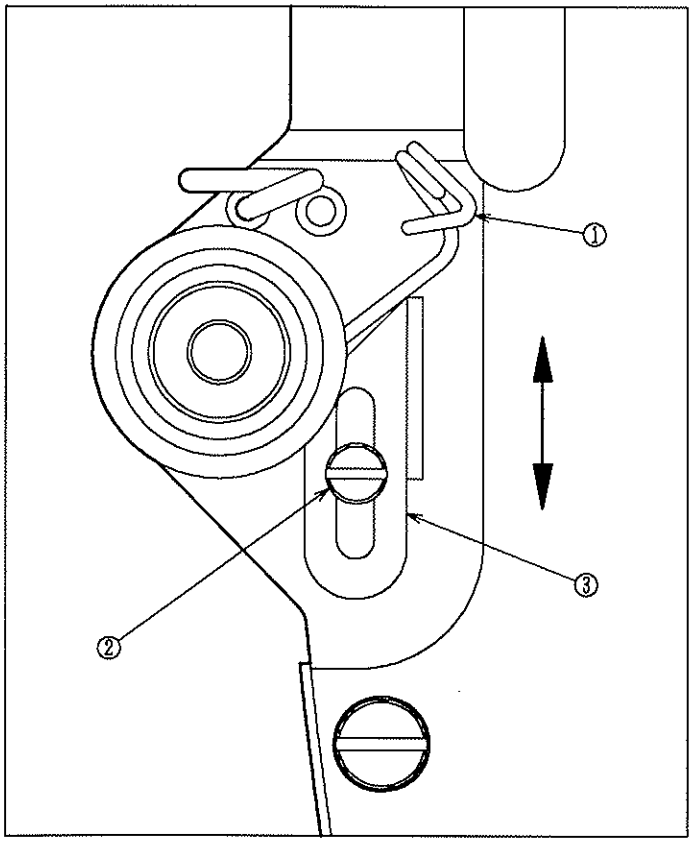


♦Adjusting the bobbin thread tension

To adjusting the bobbin thread tension
1) Loosen screw ①.
2) Adjust the bobbin thread tension by turning screw ②.
To increase the bobbin thread tension, turn the screw to the clockwise Ⓐ.
To decrease the bobbin thread tension, turn the screw to the counterclockwise Ⓑ.
3) After the bobbin thread tension has been adjusted, tighten screw ① firmly.

14.THE THREAD TAKE-UP SPRING

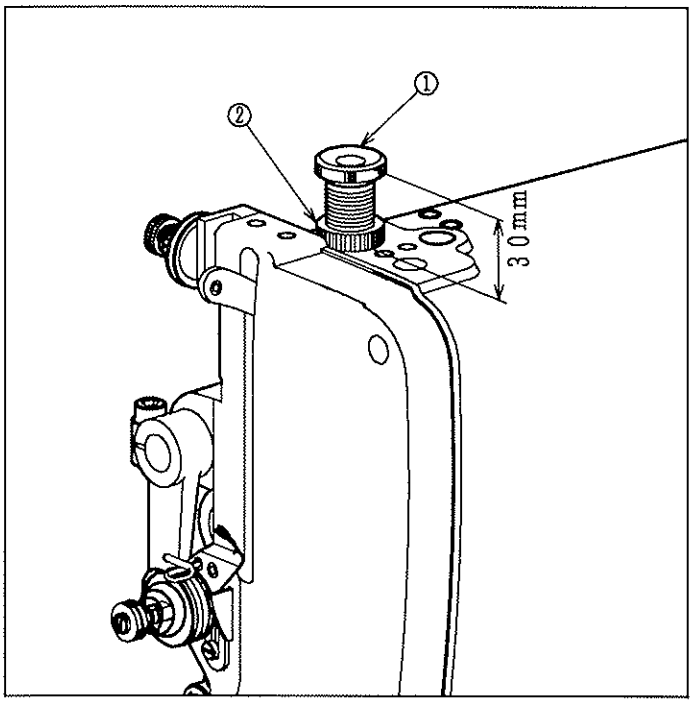
⚠CAUTION TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



The normal stroke of thread take-up spring ① is 8 to 10 mm.
To adjust the operating range:
1) Loosen screw ②.
2) Adjust the operating range by moving thread the take-up spring adjusting plate ③ up and down.
3) After adjustment has been completed, tighten screw ② firmly.

15.ADJUSTING THE PRESSER FOOT PRESSURE

⚠CAUTION TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



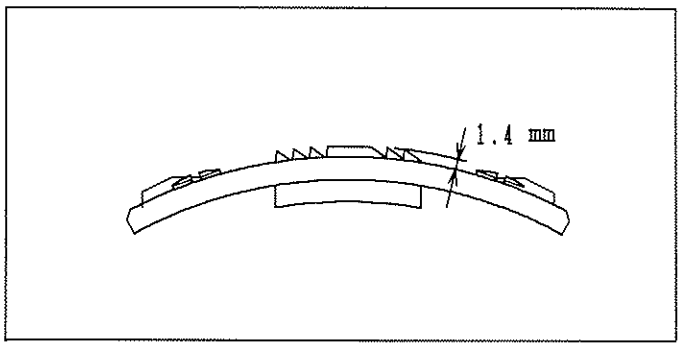
Normal height of presser spring regulator is 30 mm.

The intermediate presser foot pressure can be adjusted according to the type of material to be used.
To adjust the work pressing pressure, follow the procedure stated below.
1) Loosen the nut of presser spring regu -lator ②.
2) Turn the regulator ① clockwise to incre -ase the pressure, or counterclockwise to decrease it.
3) After the adjustment, tighten the nut ② so that regulator is securely fixed at the proper position.

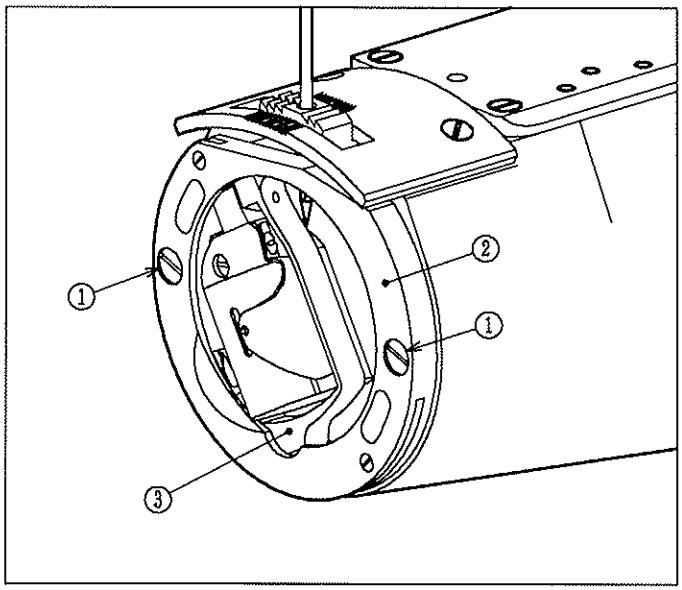
♦ **Operate the machine with the work pres sing pressure minimized.**

16. ADJUSTING THE HEIGHT OF THE FEED DOG

CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.

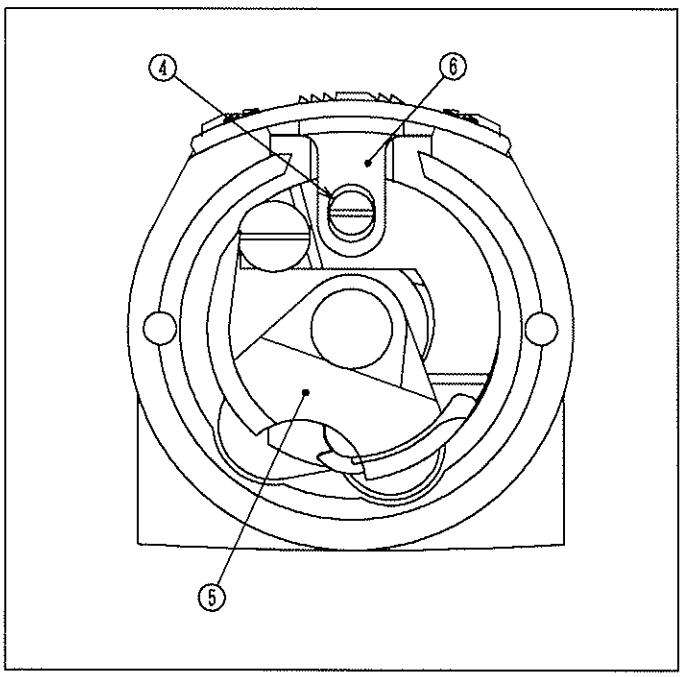


The advance amount of the feed dog from throat plate has already been adjusted to 1.4 mm.



To adjust the height of the feed dog acc-ording to the sewing condition given,

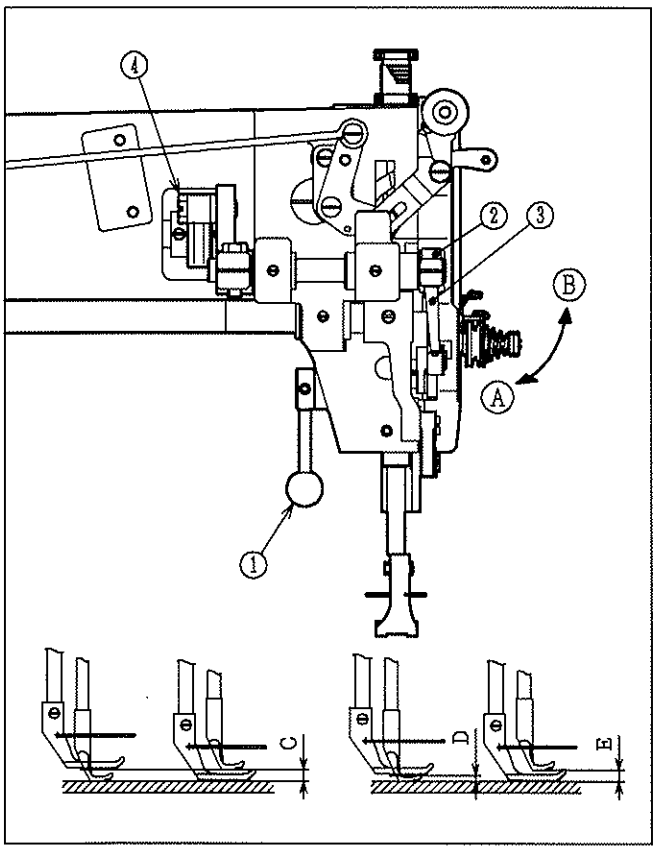
1) Remove two screws ① in the shuttle race, and remove shuttle race ②. Then remove shuttle ③.



2) Turn the handwheel to move shuttle driv-er ⑤ untill screw ④ in the feed dog appears.
3) Loosen screw ④ in the feed dog and adju-st the height of the feed dog by moving feed dog ⑥ up or down.
4) After the adjustment, firmly tighten sc-rew ④ in the feed dog.

17. ADJUSTING THE WALKING FOOT

⚠ CAUTION TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



◆Alternate vertical motio -ns of the walking foot and the presser foot

1) The alternate vertical stroke of the wa -lking foot and the presser foot are no -rmally equal.

2) Depending on the type of material, howe -ver, the vertical stroke of the presse -r foot and walking foot should be chan -ged.

3) For instance, when sewing slippery mate -rial or sewing many overlapping sectio -n, a better result may be obtained by adjusting the vertical stroke of the wa -lking foot larger than that of the pre -sser foot.

1 Turn the handwheel by hand until the thread take-up reaches its lowest poi -nt.

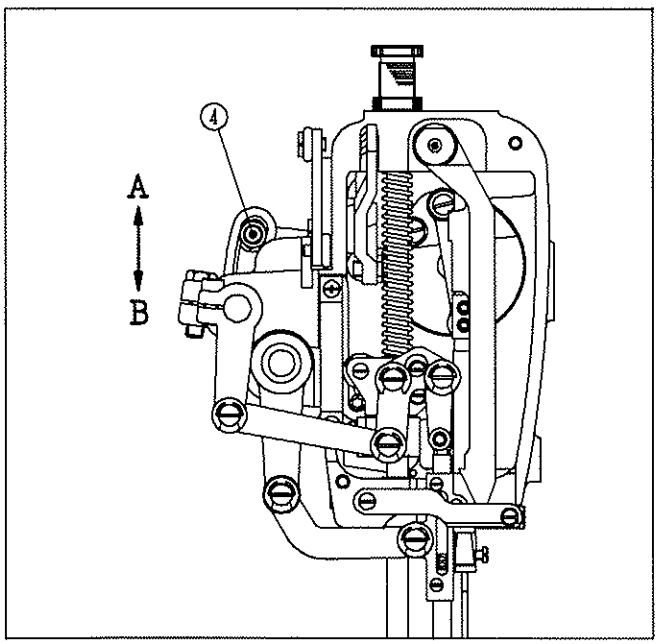
2 Lower hand lifter ①.

3 Loosen screw ②.

4 As you move top feed crank ③ to the left (in direction A), the vertical stroke of the presser foot decreases "D", whereas the vertical stroke of the walking foot increases "E".

5 On the contrary, as you move the top feed crank to the right (in direction B), the vertical stroke of the walkin -g foot becomes closer "C" to that of the prssser foot when the walking foo -t sole in contact with the throat pl -ate surface.

6 After adjustment, securely tighten screw ②.



◆Height of the walking foo -t and the presser foot

1) When sewing elastic material or overlap -ping sections, a better result may be obtained by changing the height of the presser foot and walking foot.

1 Loosen hinge screw ④.

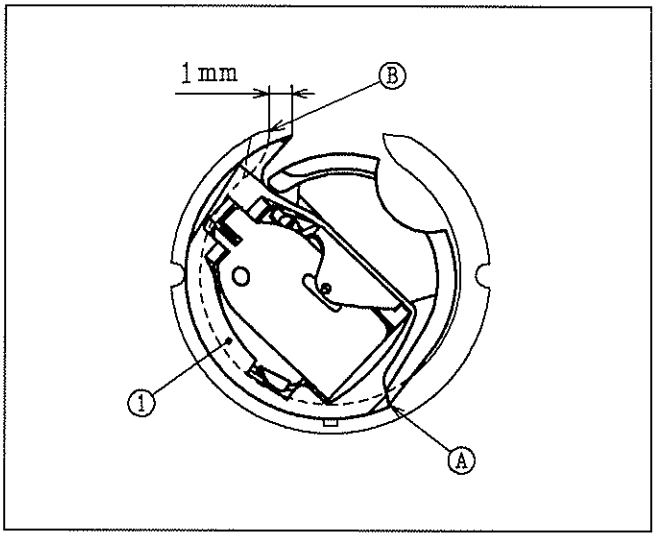
2 When you move the cam rot boss toward "A" within the slot, the height is de -creased.

3 When you move it toward "B", the hei -ght is increased.

4 After adjustment, securely tighten hinge screw ④.

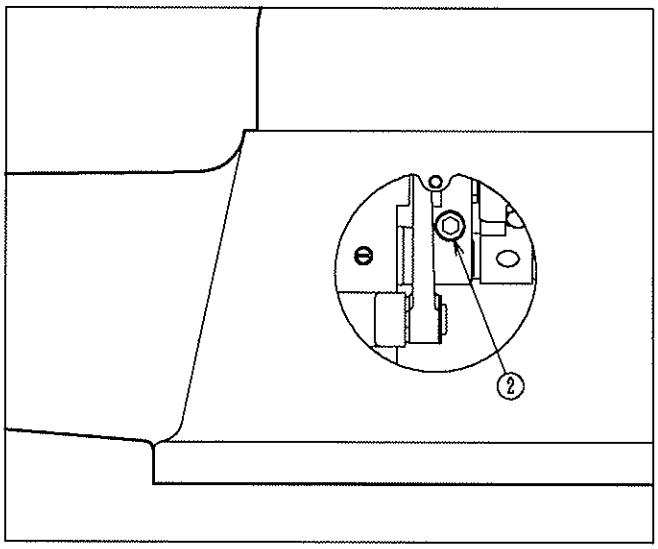
18. ADJUSTING THE NEEDLE-TO-SHUTTLE RELATIONSHIP

CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE-XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



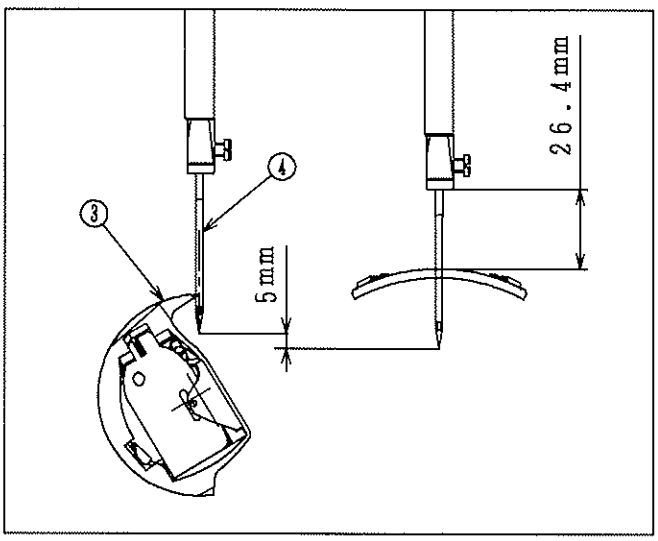
◆The position of the shuttle when it is rec-essed most.

When shuttle ① turns counterclockwise until it will go no further and the shuttle and the shuttle race come in contact with each other at point Ⓐ, a distance of 1 mm should be prov-ided between the blade point of the shuttle and end face Ⓑ of the shuttle race.



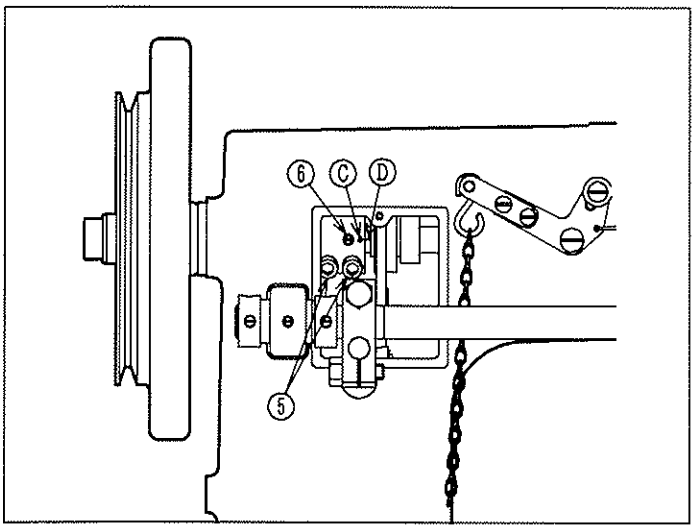
To adjust the position of the shuttle being pulled:

1) Turn the handwheel and stop turning when the shuttle turns counterclockwise until it will go no further.
2) Loosen screw ②.
3) Align the blade point of the shuttle by tu-rning the shuttle by hand.
4) After adjustment has been completed, tight-en screw ② firmly.



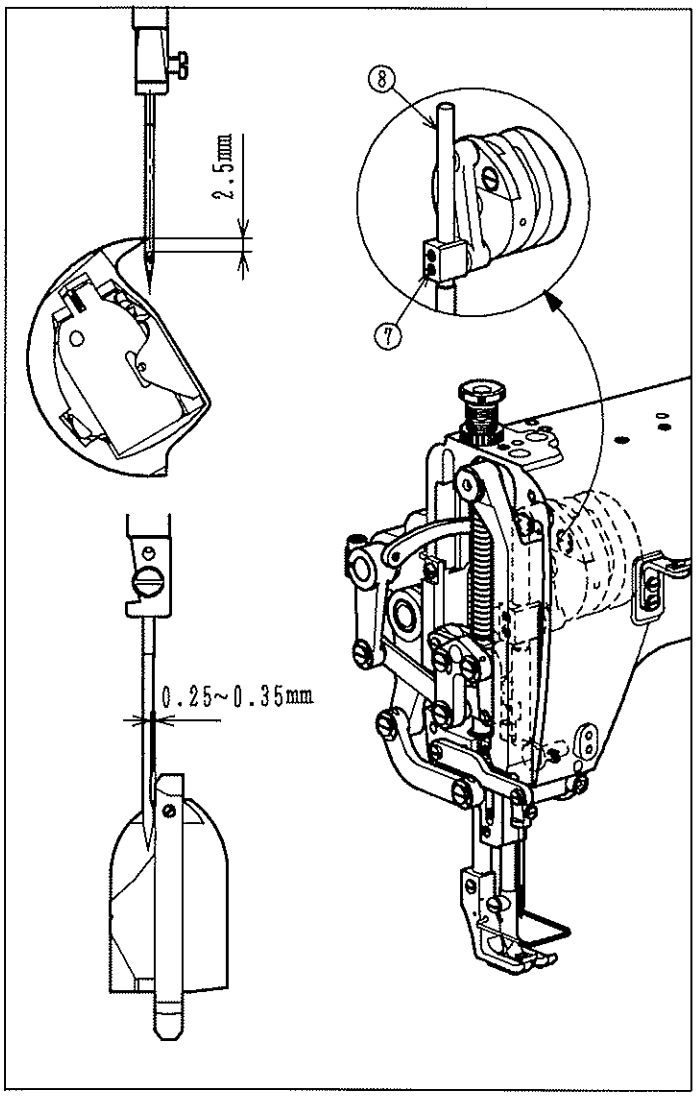
◆Positioning the needle and shuttle

Turn the handwheel to make the needle bar ascend 5 mm from its lowest position.
At this time, blade point ③ of the shuttle should be aligned with the center of needle ④.
(Reference value of the lowest position of the needle bar stroke)
The distance from the upper surface of the throat plate to the lower end of the needle bar should be 26.4 mm with the feed pitch set to 0 mm.



To adjust the position of the needle and shuttle

1) Loosen screw ⑤.
2) Loosen screw ⑥, and adjust so that mar-ker dot Ⓒ engraved on the eccentric cam of the vertical rod is aligned with marker line Ⓓ engraved on the ma-in shaft. Then, tighten screw ⑥.
3) Turn the handwheel toward you, and check the lifting amount of the needle bar.
4) After the adjustment, securely tighten screws ⑤ and ⑥.



◆The height of the needle bar

The correct height is that the distance from the blade point of the shuttle to the upper end of the needle eyelet is 2.5mm when the blade point of the shuttle is aligned with the center of the needle.

To adjust the height of the needle bar

1) Set the feed pitch to 0 mm.
2) Turn the handwheel and stop turning it when the blade point of the shuttle is aligned with the center of needle.
3) Loosen screws ⑦.
4) Adjust the height by moving needle bar ⑧ up and down.
5) After adjustment has been completed, fi-rmly tighten screws ⑦.

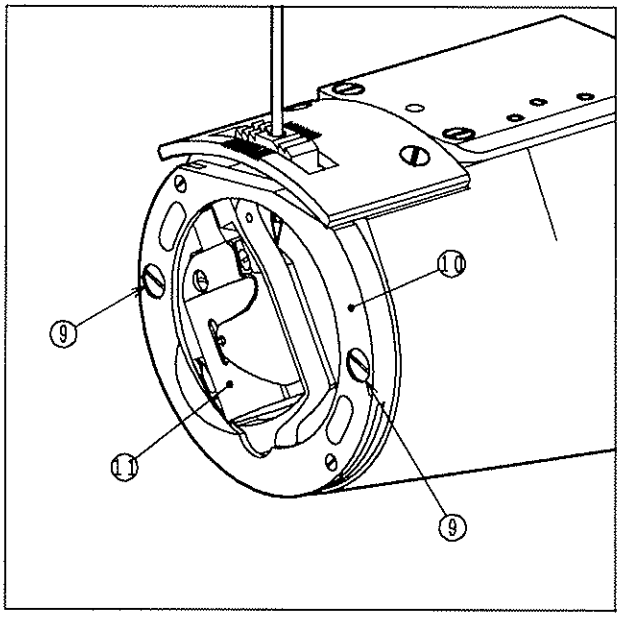
◆The needle-to-shuttle clearance

The clearance between the recess in the needle and the blade point of the shuttle has already been adjusted to 0.25~0.35 mm.

Point of the shuttle has already been adjusted to 0.35mm.

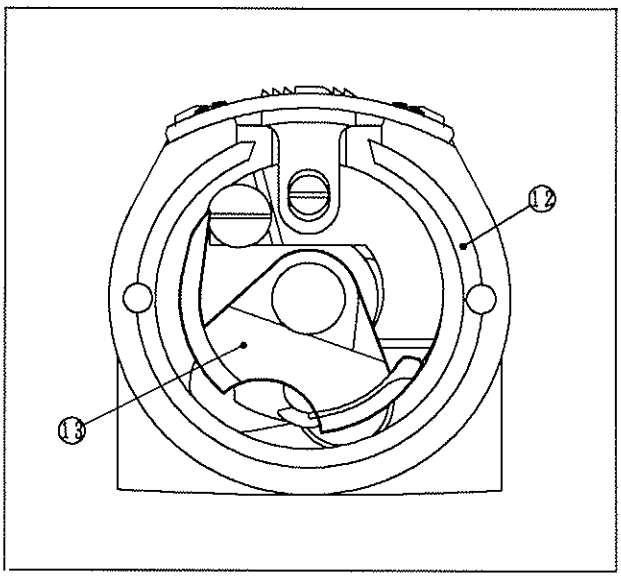
Adjust the clearance between the needle and the shuttle by replacing the shuttle race back.

(The shuttle race back comes in six diff-erent thickness in addition to the stan-dard thickness.)

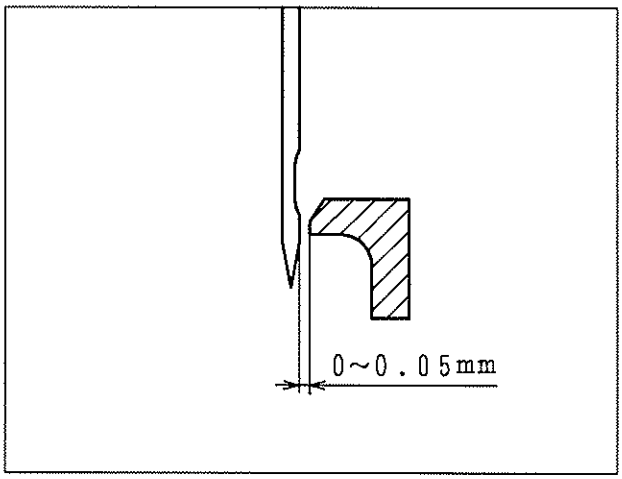


To replace the shuttle race back

1) Remove two screws ⑨ in the shuttle race, remove shuttle race ⑩, and remove shuttle ⑪ .

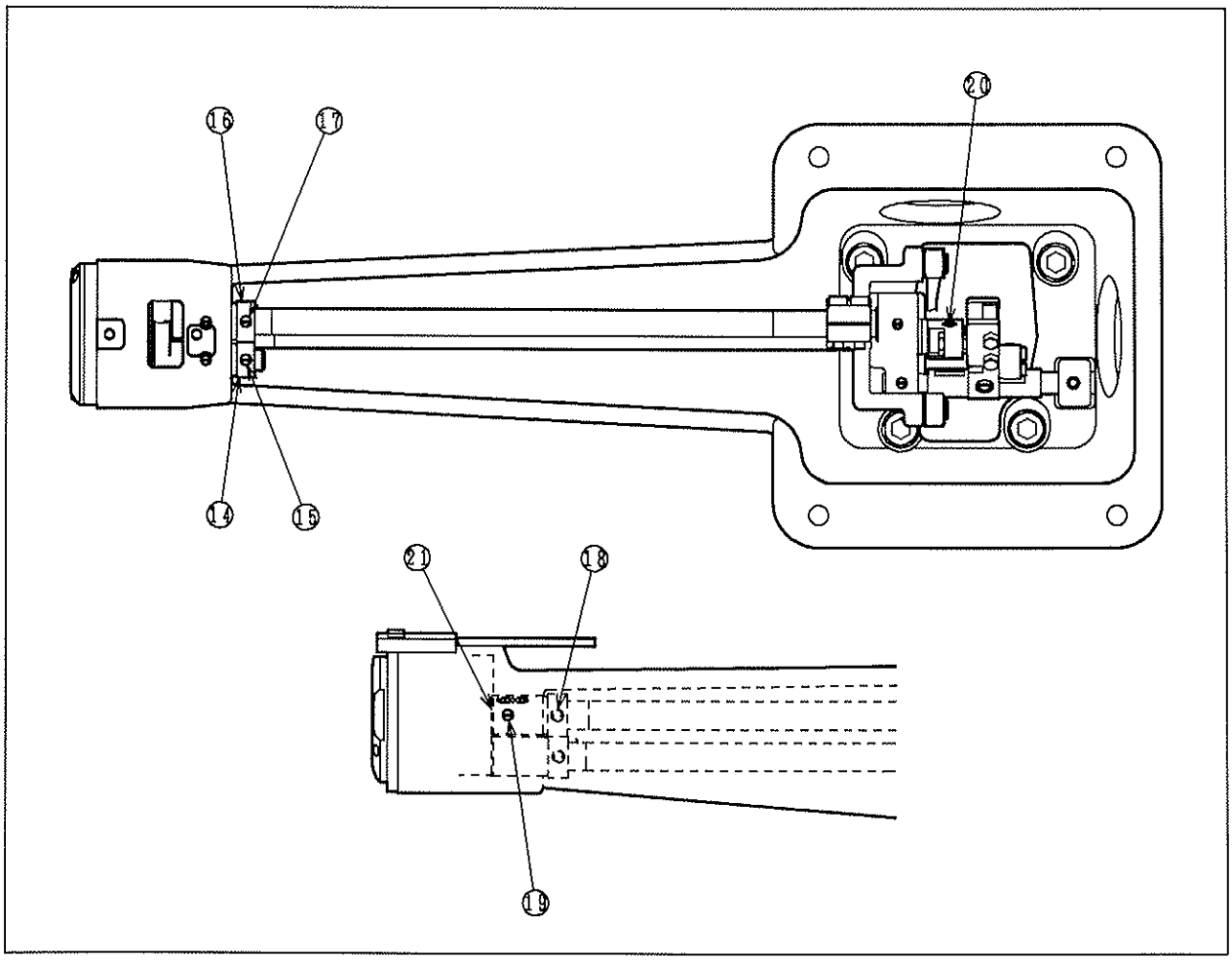


2) Turn the handwheel until shuttle driver ⑬ is brought to the position where shuttle race back ⑫ comes off.
Then replace the shuttle race back.



◆Clearance between the needle and the shuttle driver

The clearance between the needle and the nee-dle guide of the shuttle driver has already been adjusted to the range of 0 through 0.05mm.



To adjust the clearance between the needle and the shuttle driver

1) Loosen two screws ⑮, and remove thrust collar ⑭ of the feed rock driving shaft on the feed bracket.

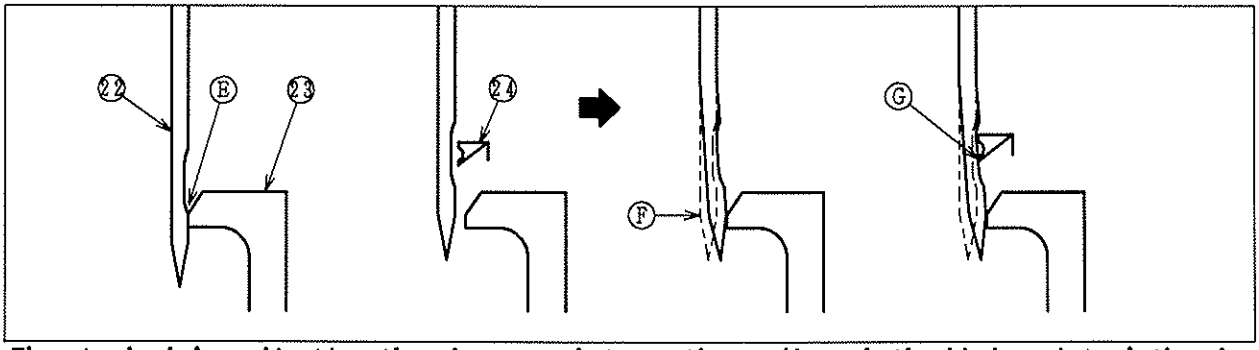
2) Loosen two screws ⑰, and move thrust collar ⑯ of the feed rock shaft.

3) Loosen two screws ⑱ in the shuttle driving shaft thrust collar , screw ⑲ in the shuttle driving shaft front bushing and small pendulum clamping screw ⑳.

4) Adjust the clearance by moving shuttle driving shaft front bushing ㉑ to the left and right.

5) After the adjustment has been completed, secure the shuttle driving shaft thrust collar and the small pendulum, making sure there is no axial play of the shuttle driving shaft.

6) Finally, secure the respective thrust collars, making sure there is no play in the feed driving shaft and the feed rock shaft.



The standard for adjusting the clearance between the needle and the blade point of the shu -ttle

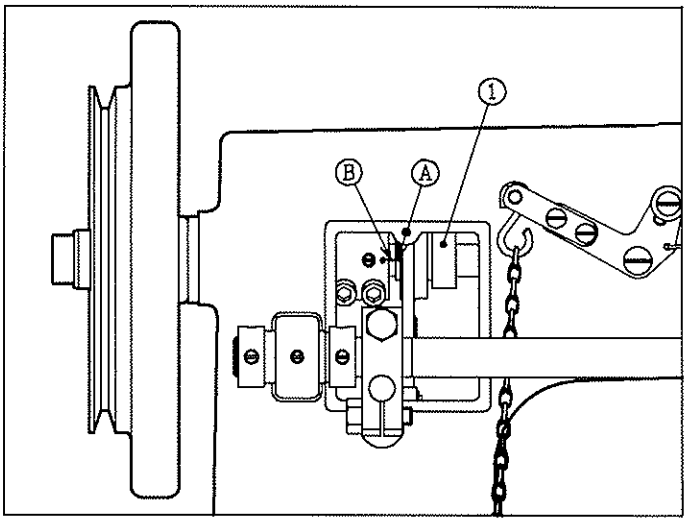
Use a standard Schmetz 794-Nm 230 needle.

1) Adjust the clearance Ⓔ between the convex section of needle ㉒ and shuttle driver ㉓ to 0.
2) Align the needle center with the blade point of shuttle ㉔ and press the Ⓕ section of the needle against the shuttle driver.
3) Adjust the clearance Ⓖ to a minimum, with the needle pressed against the shuttle driver, making sure that the needle does not contact the blade point of the shuttle.

*By this adjustment the needle-to-shuttle blade point clearance will be 0.25~0.35mm.

19. THE FEED DOG-TO-NEEDLE RELATIONSHIP

⚠ CAUTION	TURN THE SWITCH OFF THE POWER SUPPLY TO PREVENT FROM UNE -XPECTED INJURY. BE SURE TO CONFIRM THE STOP OF ROTATION OF THE MOTOR BEFORE OPERATIONS.



The standard timing between the feed dog and the needle is obtained when the feeding motion starts at the same time when the ne -edle starts descending from its highest dead point.

◆To adjust the timing between the feed dog and the needle, follow the procedure stat -ed below.

1) Loosen the two screws in feed eccentric cam ①.
2) Align marker line Ⓐ engraved on the side plate of the feed eccentric with marker line Ⓑ engraved on the main shaft to obt -ain the standard timing.
3) After the adjustment, securely tighten the two screws in the feed eccentric cam.

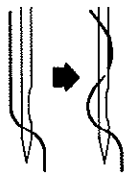
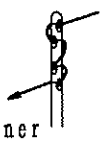
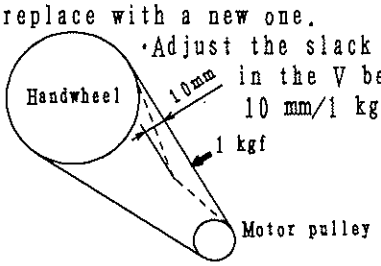
20. THE MOTOR PULLEY AND THE BELT

Sewing speed of the mach -ine (s.p.m)	4P			
	50 Hz		60 Hz	
	Motor pulley O.D.	Belt lenght	Motor pulley O.D.	Belt lenght
600	65 mm	55 inches	55 mm	54 inches
800	85 mm	56 inches	70 mm	55 inches

1) Use an M-type motor pulley and V -belt.
2) The relationship between the motor pulley/belt length and the sewing speed of the machine is shown in the table on the left.

(Caution) When using a single phase motor, use belts of 1 inch longer than those shown in the left-hand table.

20. PROBLEMS WITH SEWING AND CORRECTIVE MEASURES

Problem	Cause	Corrective measures
1. Thread often breaks or thread splits finely, correct stit -ch cannot be formed (half-finished stit -ch)	1) Flaw is found out at thread path, needle point, shuttle blade point, or needle eyelet.	·Remove flaw by smoothing flow with fine paper file.
	2) Improper finish around the recess in the needle.	·Replace the needle with a new one.
	3) Excessively tightened needle thr -ead tension.	·Adjust the needle thread tensio -n.
	4) The needle interferes with the blade point of the shuttle.	·Refer to "18. Adjusting the needle -to-shuttle relationship".
	5) The timing of the needle and the shuttle is too early or too slow.	·Refer to "18. Adjusting the needle -to-shuttle relationship".
	6) Due to heat generated by the nee -dle.	·Decrease the sewing speed of the machine. Use silicone oil.
	7) Excessive height difference at stepped section.	·Increase the amount of movement of the thread take-up spring.
2. Stitches are frequen tly skipped	1) The needle-to-shuttle blade point clearance is excessive.	·Refer to "18. Adjusting the needle -to-shuttle relationship".
	2) The timing of the needle and the shuttle is too early or too slow.	·Refer to "18. Adjusting the needle -to-shuttle relationship".
	3) The presser bar pressure is insu -fficient.	·Tighten the presser adjuster sc rew.
	4) The distance from the upper end of the needle eyelet to the blad -e point of the shuttle is not proper.	·Refer to "18. Adjusting the needle -to-shuttle relationship".
	5) The needle is improperly select -ed.	·Replace the needle with a one-count lower needle.
	6) The amount of movement of the thread take-up spring is excessi -ve.	·Decrease the amount of movement of the thread take-up spring.
	7) Overheated needle or shuttle. Thr ead is not pulled smoothly.	·Use silicone oil. 
	8) Reverse stiching is made at low speed on light weight material using nylon thread.	·Wind the needle thread around the needle.
3. Improper thread tension, irregular stitch, excessive bobbin thread tens -ion	1) Poor finish of the thread path.	·Smooth the surface with a fine paper file or using a buff.
	2) The bobbin slides unsmoothly.	·Replace the bobbin or the shutt -le.
	3) Weak bobbin thread tension.	·Adjust the bobbin thread tension.
	4) Bobbin thread is wound too tight -ly.	·Decrease the tension of the bobb -in thread winder.
	5) Needle thread flaps. (Needle thre -ad flaps and comes out of the thread tension disc due to exce -ssive needle thread tension or is caught in other parts.)	·Thread the tension guide bar as illus -trated right. 
	6) Too thin bobbin thread is used to combine with needle thread.	·Use silicone oil.
4. Poor gloss of the needle thread	·Excessive height difference at stepped section.	·Use silicone oil.
5. The belt slips (Motor stoppage occ -urs, if an electro -nic is used.)	1) The V belt is degraded.	·When degradation is found out to the V belt as wear, cracking, etc., replace with a new one.
	2) The V belt tension is not enough.	·Adjust the slack amount in the V belt to 10 mm/1 kgf. 

GOLDEN WHEEL
啓翔股份有限公司

CHEE SIAN INDUSTRIAL CO.,LTD
No.32,Wu Chuan 7th Road, Wu Ku Industrial Area,
Wu Ku Hsiang 24248, Taipei Hsien, Taiwan
Tel:886-2-2999518 Fax:886-2-2999519