

HIGHLEAD

HLK-03

Electronic Direct Drive Bar Tacker Machine

Instruction Manual
Parts Catalog

SHANGHAI BIAOZHUN HAILING SEWING MACHINERY CO., LTD.

FOR YOUR SAFETY!

If you operate the sewing machine first time, please make sure to read the following instructions for your safety and proper operation.




In this technical manual, the notice **CAUTION** is mentioned at some paragraph to attract your attention for the safety. Please keep it in mind whenever you work with the sewing machine.

CAUTION is used as the notice to warn a possible danger to cause a wound

This technical manual explains the instructions how to operate and maintain the sewing machine. All information in this technical Manual are subject to change without notice.

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Explanations for the warning signs

NO	Warning sign	Meanings of warning sign
1		<p>Caution for sewing machine operation: Warning to operate the sewing machine without safety guards and to prohibit doing any operation except sewing while the power is turned ON.</p>
2		<p>Caution for a wound on the fingers: Warning to a possible danger to cause a wound on the fingers under the specified operation.</p>
3		<p>Caution for the fingers: Warning to a possible danger to be caught the fingers in the machine under the specified operation.</p>

ENVIRONMENT STANDARD

Caution

- ★ For avoiding the sewing machine from the troubles, please do not operate the sewing machine under the following conditions.

1. Temperature and humidity

➤ During operating:

The atmosphere temperature should not exceeded more 350°C(95°F) or less 5°C(41°F).

During transportation:

The atmosphere temperature should not exceeded more 55°C(131°F) or less -10°C(18°F).

➤ The relative humidity in the atmosphere should not exceeded more 85% or less 45%.

2. Atmosphere for the machine operation

➤ In the atmosphere filled with dust or corrosive gas.

➤ In the atmosphere filled with flammable or explosive gas.

3. Power source voltage

➤ In the place where the power fluctuation exceeds more or less 10% of the fixed power voltage.

➤ In the place where the power source cannot supply enough voltage to keep the motor running.

➤ Pressure shall not be less than 0.6MPa.

4. Noise

➤ In the place near a high frequency transmitter or a high frequency welder.

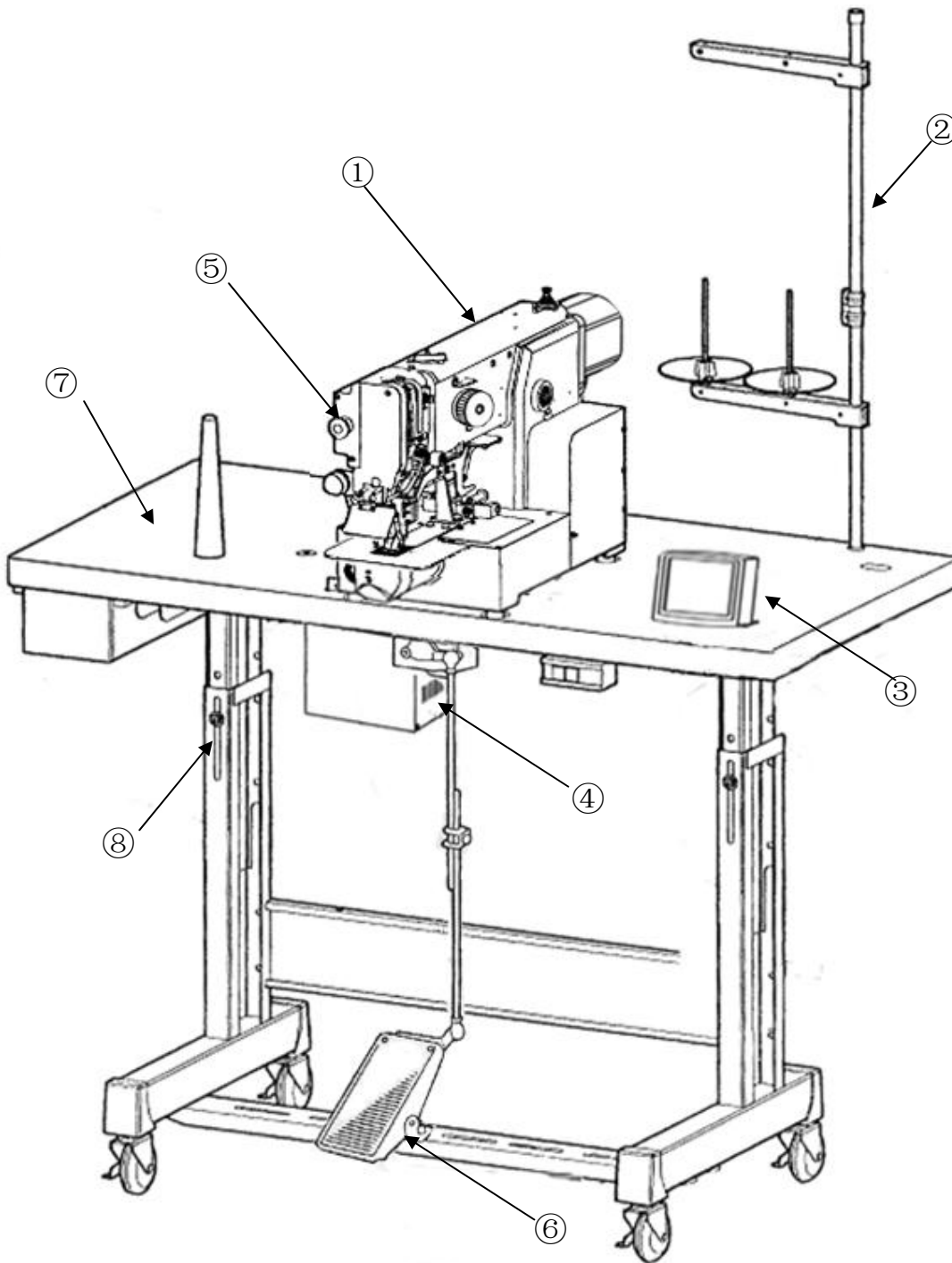
➤ In the place filled with strong electromagnetic radiation or magnetic field.

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1 STRUCTURE OF THE SEWING MACHINE



HLK-03 electronic bar tack machine is constructed with the following main parts

- ① Sewing machine head ② Thread stand ③ Operation Panel ④ Control Unit
⑤ Halt switch ⑥ Work holder foot switch ⑦ Wooden Table ⑧ Steel stand

2 SPECIFICATION

Sewing area:	X-Direction(left / right) 30mm Y-Direction(forward / backward) 30mm
Maximum sewing speed:	2000 rpm
Sewing speed:	variable from 200 to 2000 rpm
Stitch length:	0.1 to 12.7mm
Stitch type:	Single needle lock stitch
Needle bar stroke :	41.2 mm
Thread take up lever stroke:	68mm
Class of needle:	MT × 190 #21(the standard specification)
Wiper system :	Back to forward wiping system(the standard specification)
Presser foot lift:	90mm max
Hook:	Shuttle hook
Bobbin case:	With non racing spring
Bobbin:	Aluminum bobbin
Thread trimmer system:	Horizontal engagement with fixed knife and movable knife
Lubrication system:	Manual oiling and replenishment with the oil braids from the oil tanks
Lubrication oil:	White machining oil
X—Y drive system:	Stepping motor and X-Direction gear Y-Direction gear Intermittent or continuous feeding
Machine dimension:	1, 200mm (W)× 740mm (L)×1, 220mm (H)
main motor:	500W

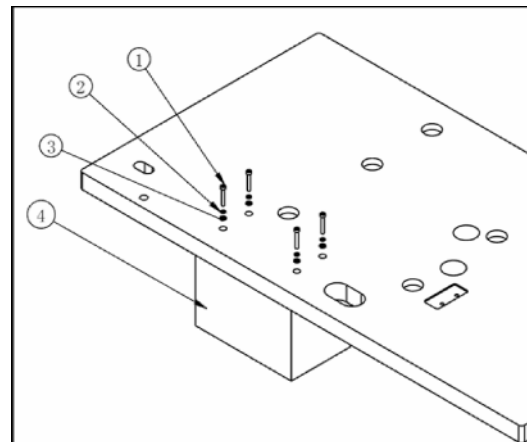
3 INSTALLATION

Caution

- ★ The machine should be installed by the specialists who have enough experience for the sewing machine installations.
- ★ All the necessary electric wiring should be done by electric engineers who are qualified for the electric wiring.
- ★ If any damage or fault is found on the machine at the installation, please do not operate until it is repaired.
- ★ Please do not operate the sewing machine with excessive modifications from the standard specification.

3-1 Installation of the control box

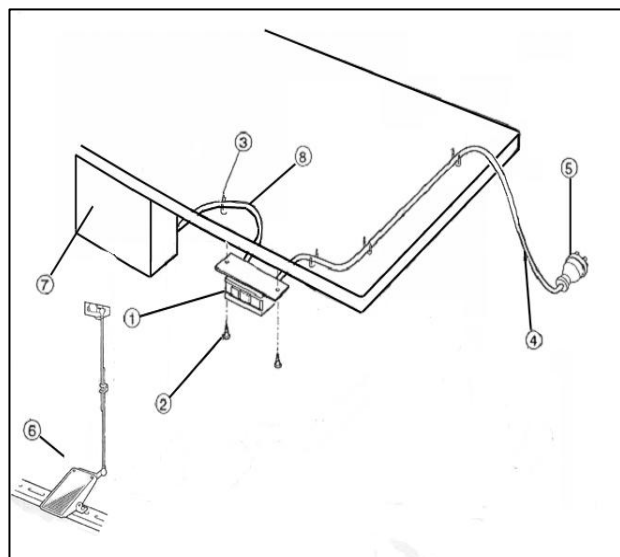
If the control box is purchased without assembling to the table, the control box has to be installed underneath the table. Please install the control box with the instruction in the paragraph.



3-2 Installation of the power switch

If the power switch is purchased without assembling to the table, the power switch has to be attached with the following procedure.

- (1) Mount the power switch ① with the wood screw ② underneath the table as shown on the figure.
- (2) Fix the electric cords with the staples ③ underneath the table.
- (3) Hook up the connector ⑧ of the power switch ① to the control box ⑦.
- (4) Attach the power plug ⑤ to another end of the power switch cord ④.



3-3 Connection of the foot switch

Connect the foot switch ⑥ to the control box ⑦. The foot switch is enclosed in the accessory box.

3-4 Installation of the oil pan

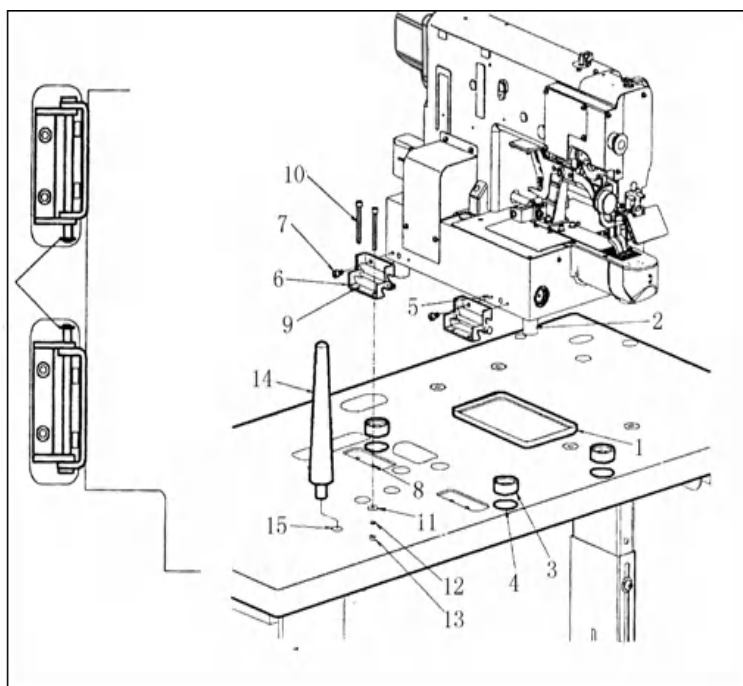
- (1) Fix the oil pan ① at its four corners on the table top with four

3-5 Installation of the sewing machine head

Caution


- ★ For the safety, please make sure to carry the sewing machine head by more than two people.

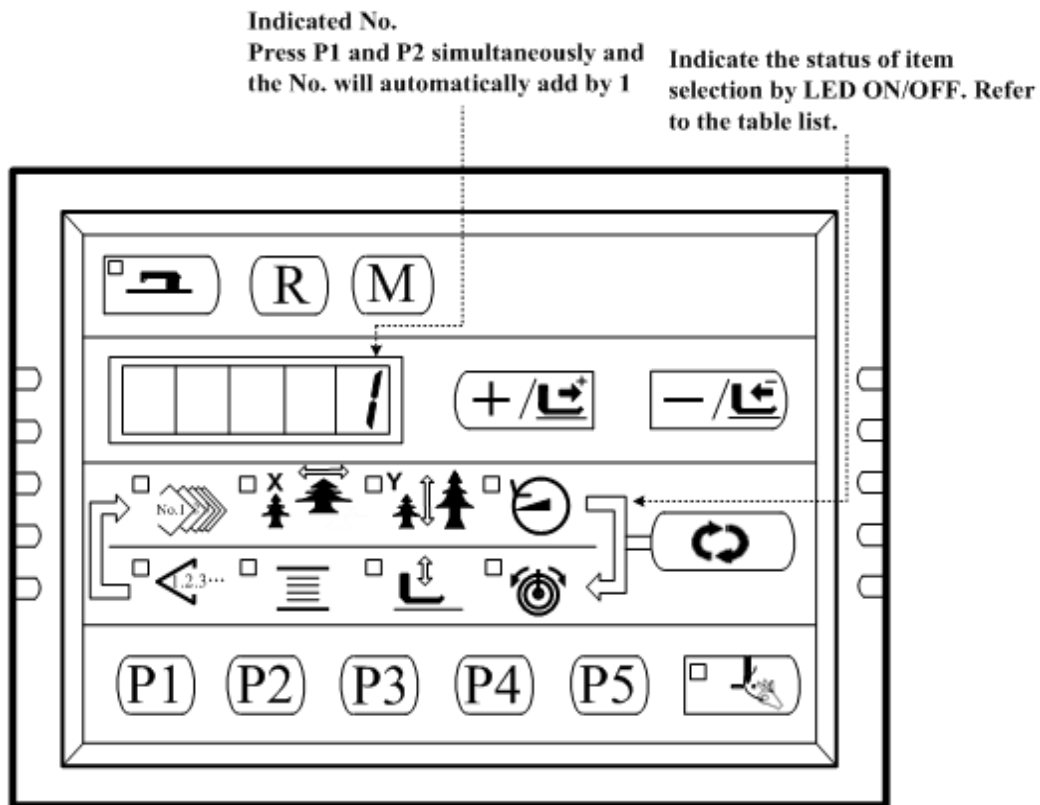
- (1) Make sure to hold the machine table with the caster stopper.
- (2) Fit the rubber cushion pads ③ into each hole ④ on the tabletop. The rubber cushion pads are enclosed in the accessory box.
- (3) Put the sewing machine head on the table top and set each leg ② to each rubber cushion pad ③.



- (4) Attach two hinges ⑥ temporarily, make the setting screw ⑦ fastening on the left side surface of the machine bed .
- (5) At this time, take notice that the E-shaped snap ring on the front side hinge must be come to the backside, and E-shaped snap ring on the backside hinge must be come to the front.
- (6) These parts are all enclosed in the accessory box.
- (7) Fit the screw holes ⑨ of the hinges ⑥ to the bolt setting holes ⑧ on the table top then, pass the bolt ⑩ through these holes and fasten the bolt ⑩ to fix the hinges ⑥ with the flat washers ⑪, the spring washers ⑫ and the nuts ⑬ .
- (8) Fasten firmly hexagonal socket head set screws ⑦, which set the hinges ⑥ temporarily then, fix the hinges ⑥ perfectly.
- (9) Insert the headrest ⑭ into the hole ⑮ on the tabletop.

3-6 Installation of the spindle motor

Reference to the controller using the instructions in section 2.2 debug mode, enter "CP-1", the screen shows "CP-1", press  key to enter the CP-1, then press P1 and P2 at the same time to adjust the parameters of the spindle motor, which is in number 6 point test content.




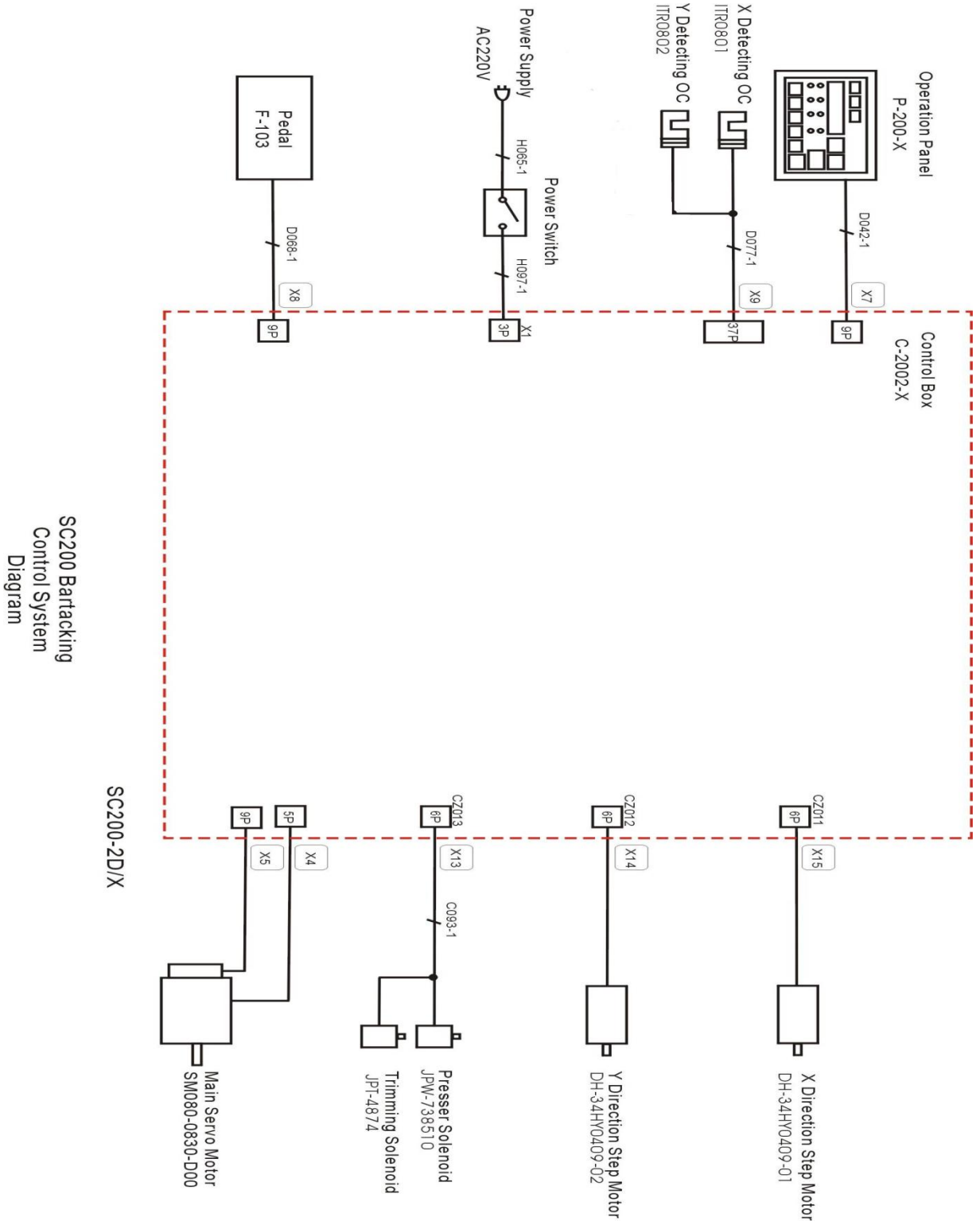
- (1) Fix the spindle motor to the machine, make sure that the needle bar is in the highest position and then wheel spindle motor rotation angle to 0, tighten the screw coupling.
- (2) Back to sewing mode, thread take-up lever is in the highest position, test the cutter.

3-7 Connection of the operation panel

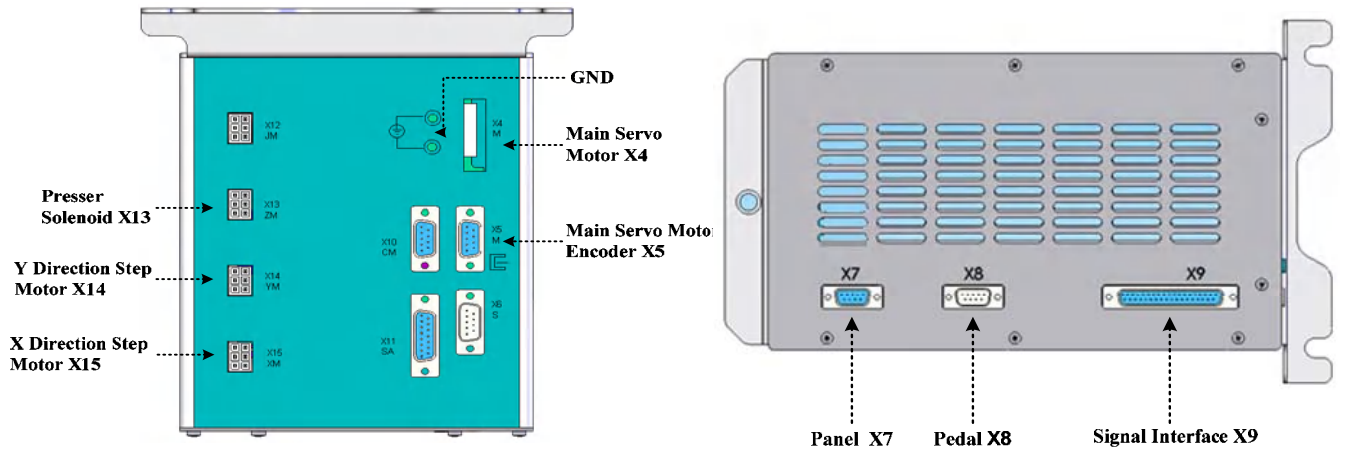
Please connect the operation panel with the instructions of operation panel manual enclosed in the packing.

3-8 Connection of the electric cables

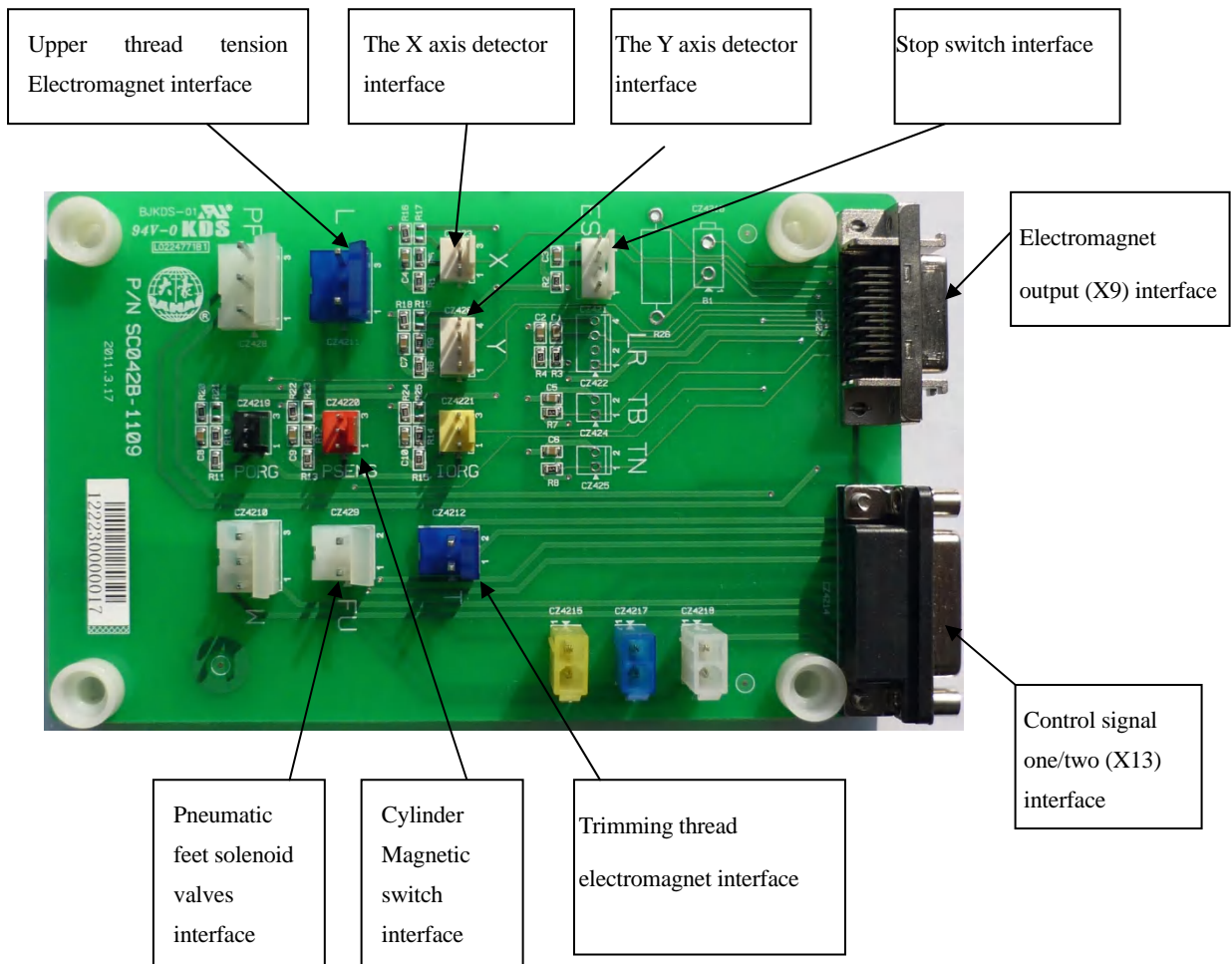
Please make sure to ground the place where there is a  mark. Failure to do so may cause electric shock and/or malfunction.



- (1) Connect the machine head and the control box with cables as shown on the figure.
- (2) Hold the dangling cables under the table with accessory tie holders and cord ties.
- (3) At this time, please check whether the cables are not pulled when tilting the sewing machine.
- (4) Control box back and socket as shown on the below figure

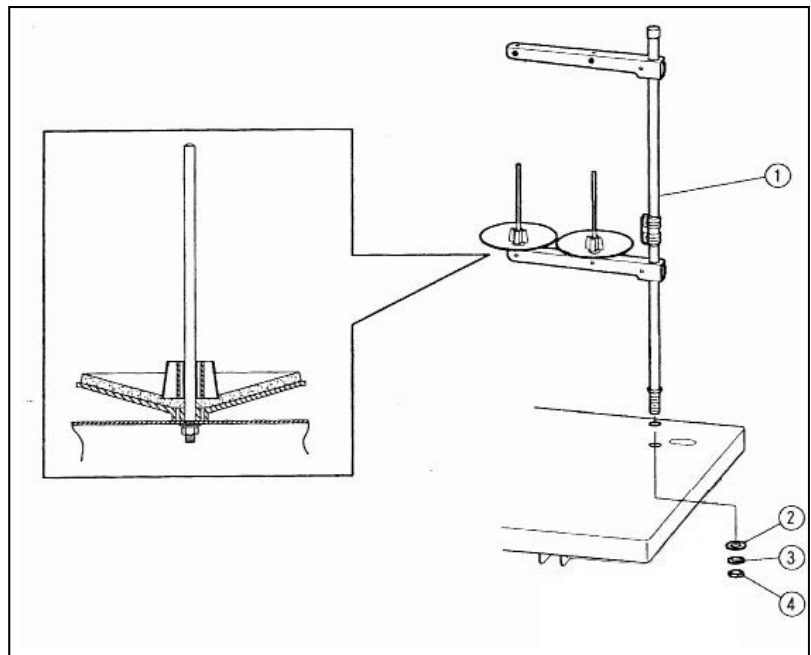


- (5) Printed circuit board wiring as shown on the below figure



3-9 Installation of the thread stand

- (1) Assemble the thread stand with the instructions enclosed in the packing.
- (2) Fit the thread stand ① in the thread stand hole on the tabletop.
- (3) Fix the thread stand ① firmly from the rear side of the table with tightening the nut ④ and the washers ②, ③.



4 LUBRICATION

Caution

- ★Please make sure to turn power switch off before oiling.
- ★Please make sure to put some oil before starting the operation of the brand new machine or when the sewing machine is resumed the operation after a long interval.

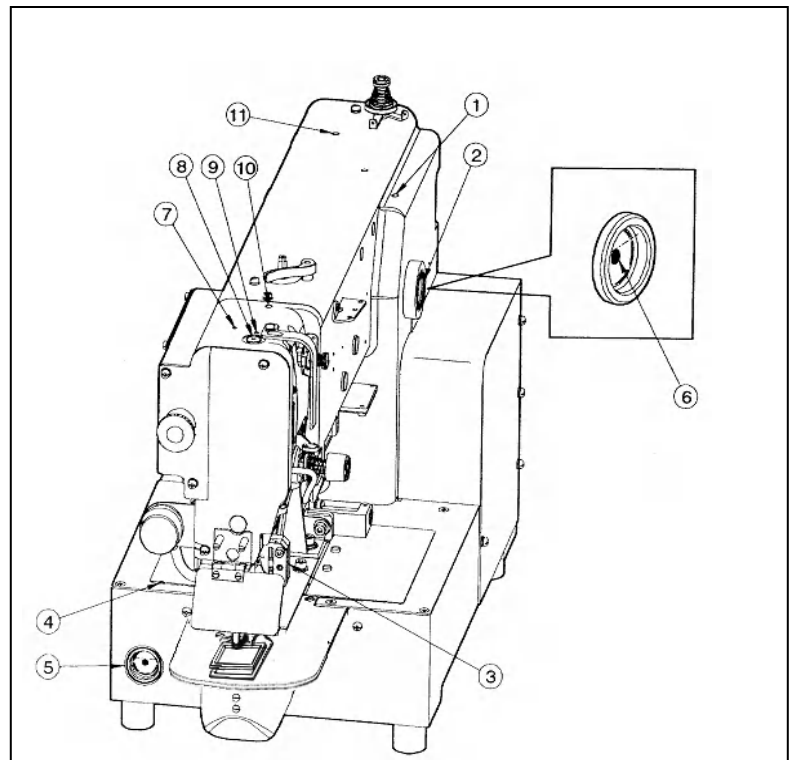
NOTE : Please use high quality white machining oil.

4-1 Filling the oil tank

Pour the oil through the oil hole ① to the oil tank ② on the machine arm. Move the work holder by hand to the right end then, pour the oil through the oil hole ④ to the oil tank ⑤ on the machine bed. Please fill with the oil over level mark ⑥ of the oil tank.

4-2 Oiling

Put some oil to red marked oil holes(NO. ⑦ ~ ⑩).



5 PROPER OPERATION

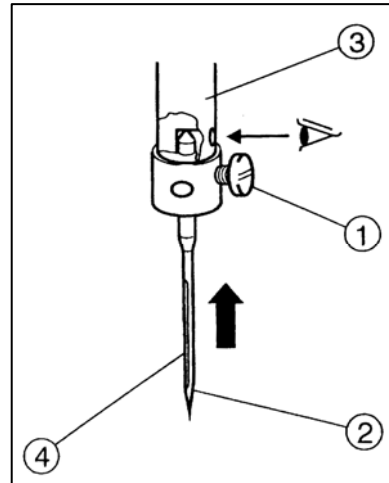
5-1 Installation of the needle

Caution

★ Please make sure to turn the power switch OFF before installing or replacing the needle.

★ Please pay attention for the fingers not to be wounded by the needlepoint.

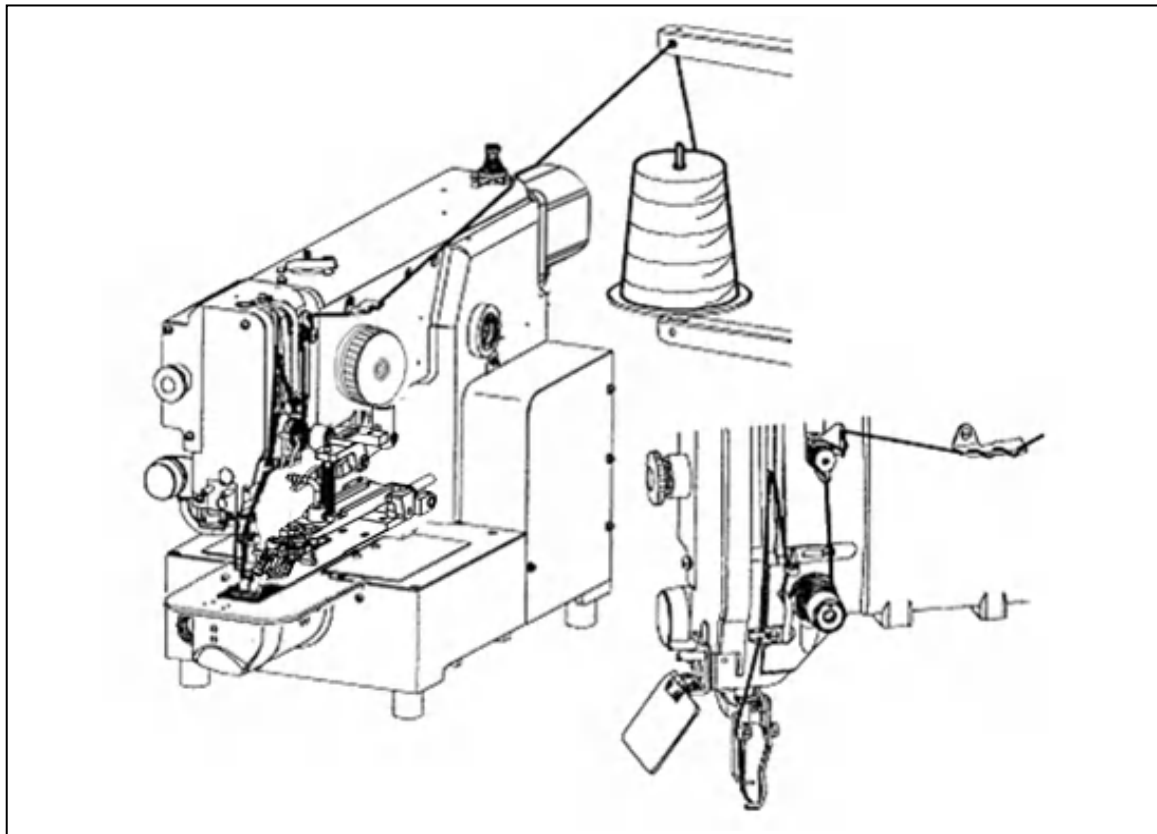
- (1) Loosen the needle set screw ① then,
Insert the new needle ② until the needle head is reached the end of the hole of the needle bar ③.
- (2) Fasten the setting screw ① with facing the needle groove ④ to the front.



5-2 Threading the upper thread

★ Please make sure to turn the power switch off before threading the upper thread.

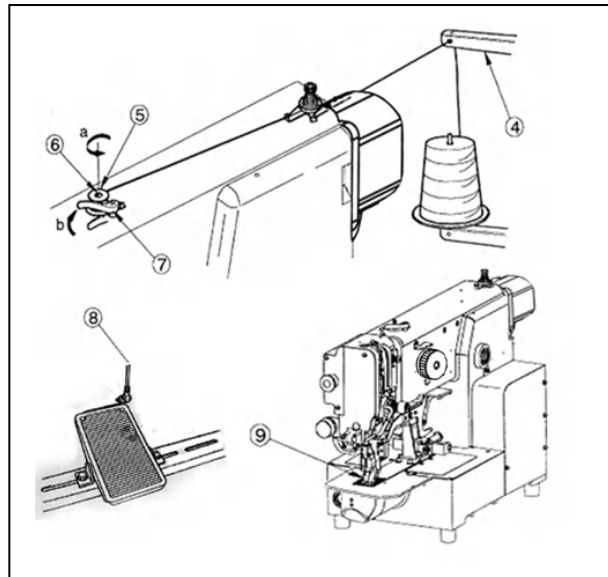
★ Please thread the upper thread with referring to the below figures.












5-3 Winding the bobbin thread

★Please make sure to pull the upper thread out of the needle before winding the bobbin thread.

- (1) Pass through the thread from the thread stand ④ as shown on the right figure . then, wind the thread to the empty bobbin ⑤ in the arrow mark “a” direction couple times and insert the bobbin ⑤ into the bobbin winder ⑥ .
- (2) Push the adjust lever ⑦ in the arrow mark “b” direction.

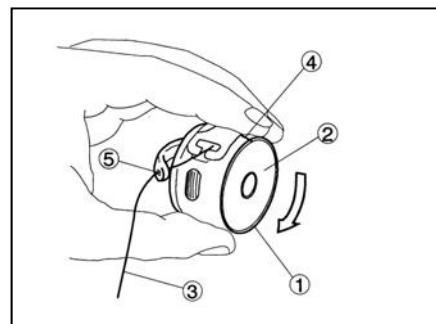


※Caution: Bobbin winder does not work immediately after Turning ON the power. Perform the bobbin winding after setting pattern NO. or the like once, pressing the  key, and making the Sewing LED light up.

- (1) Press  key to make the Sewing LED go off.
- (2) Select the bobbin winder  with  key.
- (3) Press  key. The work clamp feet ⑨ come down and the Sewing LED lights up.
- (4) When the pedal ⑧ is depressed, the sewing machine rotates.
- (5) When the pedal ⑧ is depressed again, or  key or  key is pressed, the sewing machine stops.
- (6) When  key is pressed, the Sewing LED goes off, the work clamp feet go up and  key become effective.

5-4 Settling the bobbin

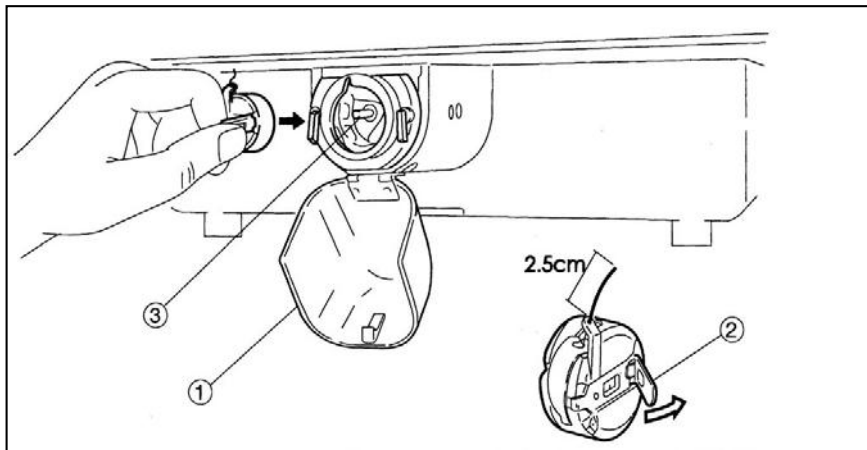
- (1) Set the bobbin ② into the bobbin case ① .
- (2) Pull the bobbin thread ③ into the slit ④ and pass the thread through the thread hole ⑤ .
- (3) At this time, pull the bobbin thread ③ then, check with the bobbin ② if it is rotated to the arrow direction. if it is not, set the bobbin ② into the bobbin case ① over again to get the proper rotation.



5-5 Setting the bobbin case

- (1) Set the needle bar to its highest position then, open the cylinder cover ①.
- (2) Open the bobbin case latch lever ② fully then, fit it securely in the inner hook ③.

[NOTE] Please pull the bobbin thread about 2.5cm out of the thread hole of the bobbin case.



6 PROPER SEWING

6-1 Operation of the halt switch

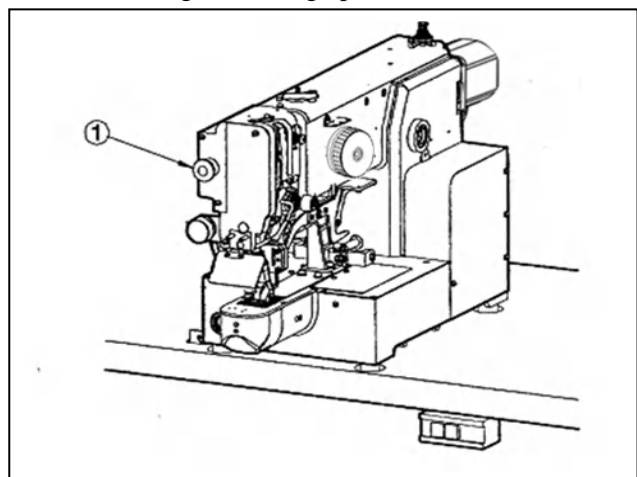
If an incident such as a thread breakage, needle breakage and any other incidents are happened during the sewing operation, please hit immediately the halt switch. The sewing machine running is stopped instantly.

Caution

★ Before start the sewing operation, please make sure the location of the halt switch and keep it in mind the function and how to use it.

★ Please keep away the hands and the face from the needle during the sewing operation.

- (1) Press the HALT switch ①, All operations will stop, and the sewing machine will stop at the needle UP state without trimming the thread.
- (2) Remove the cause of the abnormality.
- (3) To continue sewing, turn the HALT switch to the right. The switch will be unlocked.
- (4) There are two operations after stop as below.
 - ① Press (R) key to perform thread trimming,



perform position with $\boxed{+/\text{E}^+}$ or $\boxed{-/\text{E}^-}$ key, and re-start by means of the start switch.

② Press \boxed{R} key to perform thread trimming, and press again \boxed{R} key to return to the origin.

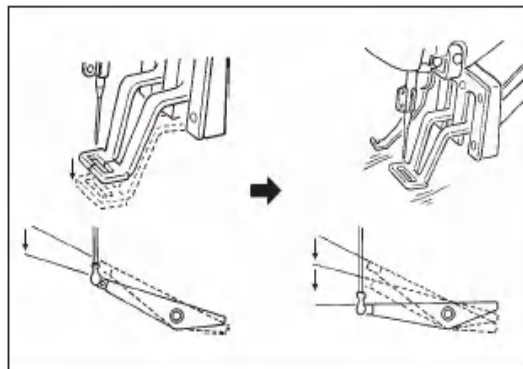
※ Note: When sewing machine stops by pressing \boxed{R} key, if you press \boxed{R} key again, the machine will perform trimming.

6-2 The sewing operation

Caution

- ★ It is very dangerous to operate the sewing machine without the safety guards(Eye guard: belt cover, Link cover, Finger guard etc.).
- ★ Please make sure to always operate the sewing machine with the safety guards.
- ★ Please do not put unnecessary articles except for the sewing operation on the tabletop.
- ★ Please keep the hands and the face away from the needle.

- (1) Set a work piece on the work clamp foot section.
- (2) Depress the pedal switch to the first step, and the work clamp feet will come down. If you detach your foot from the pedal switch, the work clamp feet will go up.
- (3) Depress the pedal switch to the second step after descending the work clamp feet at the first step, and the sewing machine will start sewing.
- (4) After the sewing machine completes sewing, the work clamp feet will go up, and return to the sewing start position.



Note1: Depress the pedal switch to the first step and press $\boxed{+/\text{E}^+}$ or $\boxed{-/\text{E}^-}$ key to change the sewing position where you need. After you confirm the position, you could depress the pedal to the second step to start your sewing.

Note2: Please do NOT use the method in Note 1 to check the contour of a sewing pattern, in case accidents caused by the sudden start of the sewing machine when you depress the pedal to the second step by mistake.

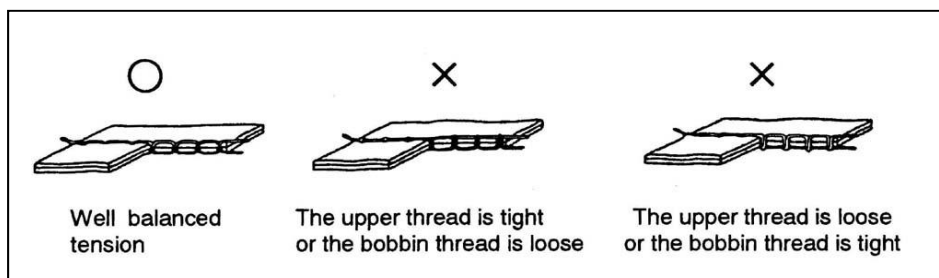
6-3 Adjustment of the thread tension

The thread tension between the upper and bobbin thread should be balanced in the best condition.

When the upper thread tension is well balanced with the bobbin thread tension, both threads are interlocked along the centerline of fabric layers as shown on the below figures.

NOTE Normally weaker bobbin thread tension brings better sewing quality.

So it is prefer to set bobbin thread tension first and then set upper thread tension.

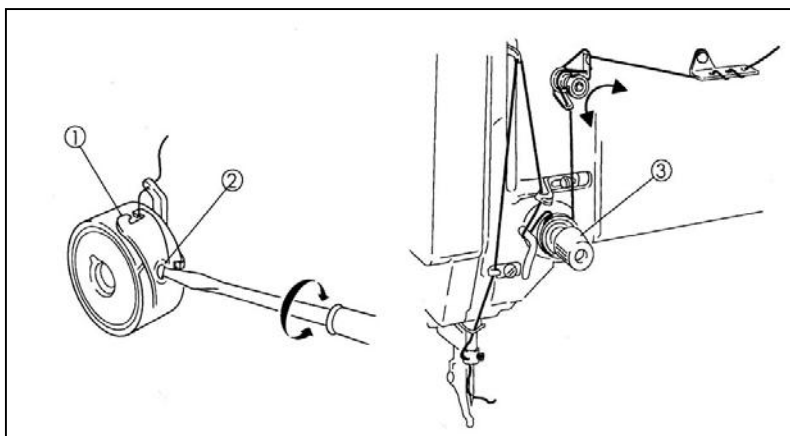


(1) Bobbin thread tension

Adjust the bobbin thread tension with the thread tension adjusting screw ② on the bobbin case ①. The thread tension becomes loose if turn the thread tension adjusting screw ② to the counter clockwise, and the thread tension becomes tight if turn it to the clockwise.

(2) Upper thread tension

Adjust the upper thread tension based on the bobbin thread tension. For this adjustment, turn the thread tension adjusting nut ③. The upper thread tension becomes tight if turn the thread tension adjusting nut ③ to the clockwise, and the upper thread tension becomes loose if turns it to the counter clock wise.



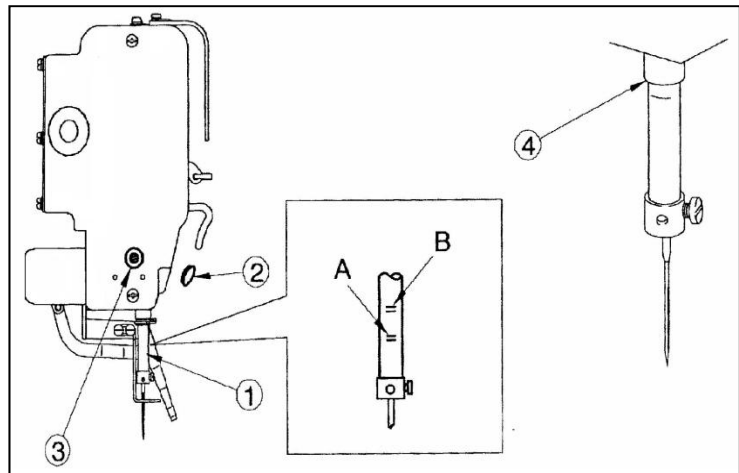
7 STANDARD ADJUSTMENT

Caution

- ★Please make sure to turn the power switch OFF before adjust the sewing machine.
- ★If the adjustment is required under the power switch is ON, keep the start foot switch away from the foot.
- ★Be careful not to be wounded by the needle or the inner hook point.
- ★Please make sure to put the safety guards(Eye guard, Belt guard, Link cover and finger guard etc.)back on the original location after the sewing machine adjustment.

7-1 Adjustment of the needle bar position

- (1) Turn the power switch OFF.
- (2) Turn the sewing machine pulley by hand then, stop the needle bar ① at the lowest position.
- (3) Remove the rubber plug ② from the face plate then, loosen the needle bar holder setscrew ③.



- (4) Move the needle bar ① to the position where the needle bar timing mark A is matched to the needle bar bushing bottom line ④ then, tighten the needle bar holder setscrew ③.

NOTE: If the needle class is DP×17, match the needle bar timing mark A to the needle bar bushing bottom line ④.

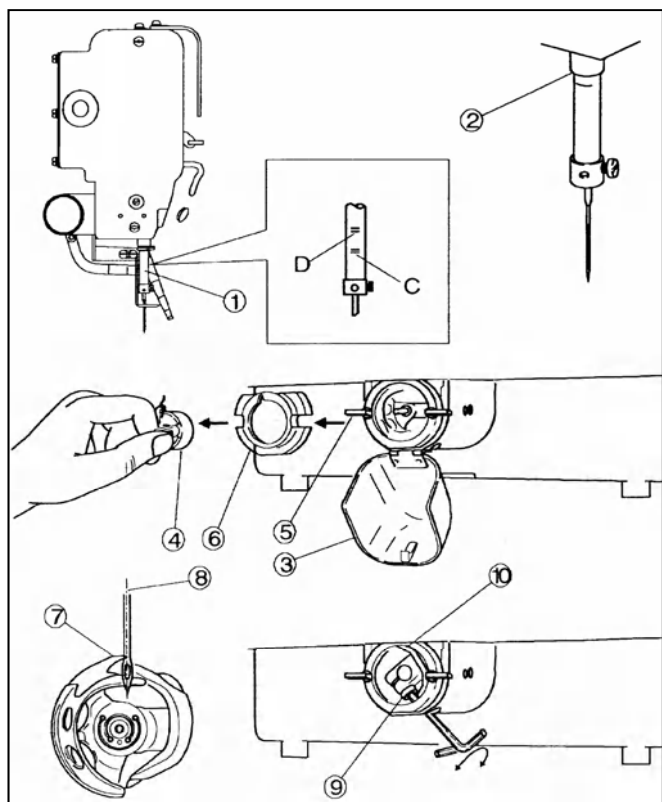
7-2 Adjustment of the position between the

7-3 needle and the shuttle hook

- (1) Turn the power switch OFF.
- (2) Turn the sewing machine pulley by hand then, move up the needle bar ① from the lowest position and stop it at the position ② where the needle bar timing mark C is matched to the needle bar bushing bottom line.

NOTE: If the needle class is DP×17, match the needle bar timing mark C to the needle bar bushing bottom line ②.

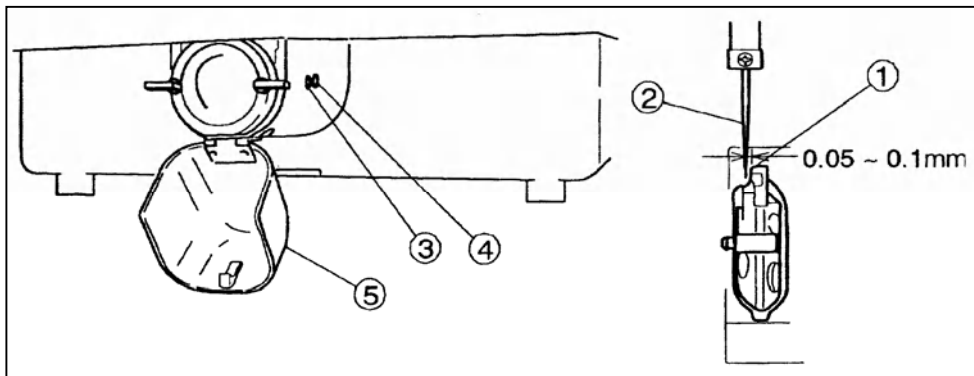
- (3) Open the cylinder cover ③.
- (4) Remove the bobbin case ④.



- (5) Turn the hook retainer lever ⑤ then, remove the hook retainer ⑥.
- (6) Loosen the driver setscrew ⑨ then, move the driver ⑩ and adjust the shuttle hook point ⑦ to be matched with the center line ⑧ of the needle.
- (7) After the adjustment, tighten the driver setscrew ⑨ and put the bobbin case ④, the hook retainer ⑥ and the hook retainer lever ⑤ back to the original location then close the cylinder cover ③.

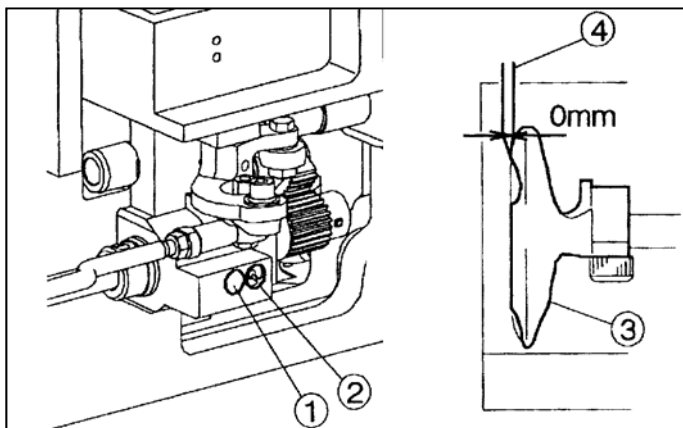
7-4 Adjustment of the clearance between the shuttle hook and the needle

- (1) Please take the same procedures as above paragraph 7-2. from(1) to(5).
- (2) Loosen the outer hook setscrew ③ and turn the eccentric pin ④ so that the clearance between the shuttle hook point and the needle becomes 0.05~0.1 mm.
- (3) After the adjustment, securely tighten the outer hook setscrew ③ and put the hook retainer and the bobbin case back to the original location then, close the cylinder cover ⑤.



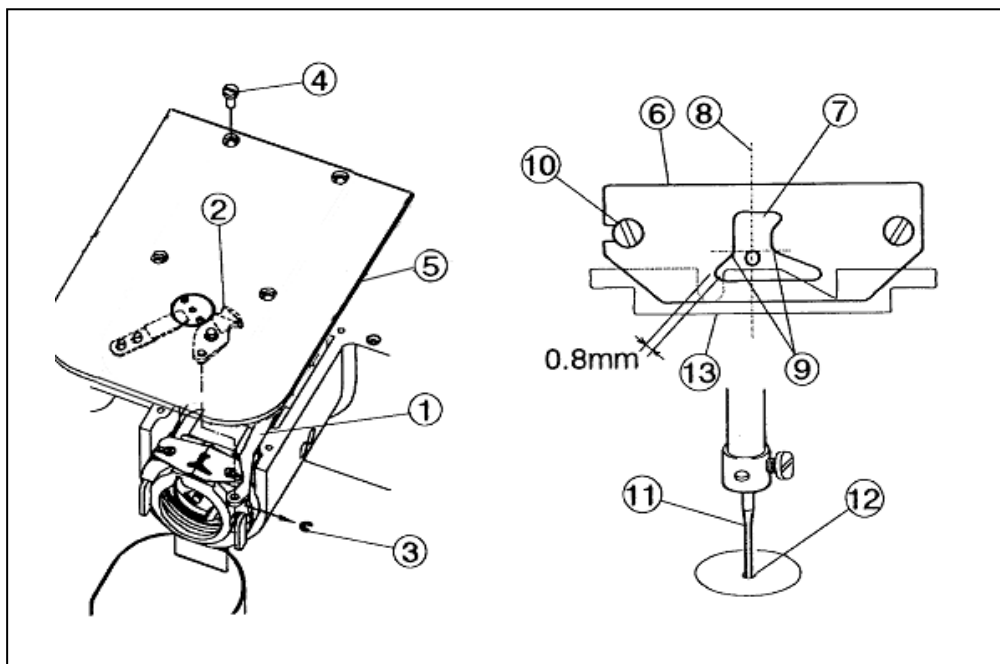
7-5 Adjustment of the clearance between the driver and the needle

- (1) Please take the same procedures as above paragraph 7-2. from(1)to(5).
- (2) Please make sure the clearance between the shuttle hook point and the needle has been adjusted 0.05~0.1 mm at above procedure 7-3 Adjustment of the clearance between the shuttle hook and the needle.
- (3) Loosen the driver setscrew ① and turn the eccentric pin ② so that the clearance between the driver ③ and the needle ④ can become 0.
- (4) After the adjustment, securely tighten the driver setscrew ① and put the hook retainer and the bobbin case back to the original location then, close the cylinder cover ⑤.



7-6 Adjustment of the thread guide

- (1) Remove the E-shaped snap ring ③ which is engaging the movable knife ② and the link ① then, loosen the setscrews ④ and remove the sliding plate(S) ⑤.
- (2) Loosen the setscrews ⑩ and move the thread guide ⑥ to the position where the needle center line ⑧ divides the needle groove ⑦ evenly and the rear side line ⑨ of the needle is aligned with the shoulder of the thread guide ⑥. At this time, make sure that there is some clearance between the hook retainer and the thread guide ⑥ at least the upper thread can be passed smoothly through it(standard clearance is 0.8mm). If this clearance is too wide, it causes the trimming failure and if this clearance is too narrow, it causes the sewing condition disturbance, the trimmed upper thread tail uneven and the locking up the hook with the upper thread.
- (3) After the adjustment, engage the link ① of the trimmer mechanism with the movable knife ② with the E shaped snap ring ③ and put the sliding plate(S) ⑤ back on the original location then, tighten the setscrews ④. At this time, set the sliding plate(S) ⑤ so that the needle ⑪ can come down to the center ⑫ of the needle hole of the needle plate.

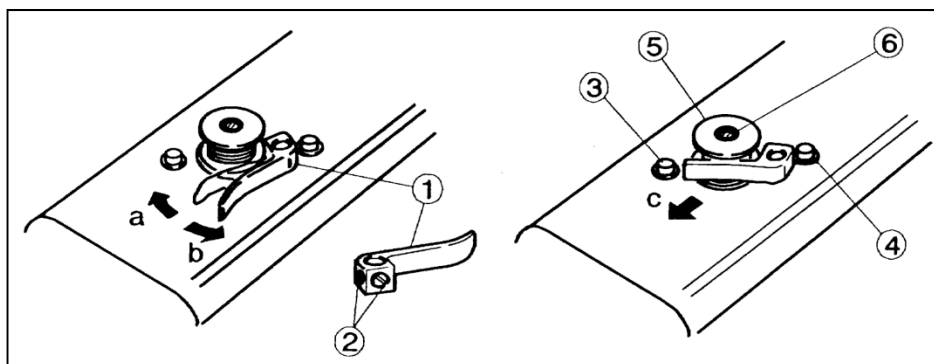


7-7 Adjustment of the bobbin winder

(1) Adjustment of the winding volume

Loosen the setscrew ② of the adjusting lever ① and adjust the position of the adjusting lever ①. If move the adjusting lever ① to the arrow direction “a” the Winding volume is reduced, and if move the adjusting lever ① to the arrow direction “b”, the winding volume is increased. The winding volume is adjusted 80% of the full volume when the sewing machine is shipped from the factory.

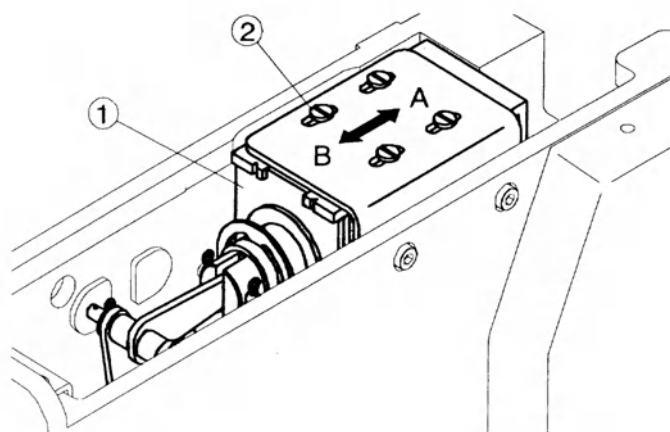
- (2) Adjustment of the proper position of the bobbin winder Firstly . loosen the setscrews ③ and ④ of the bobbin winder and put the empty bobbin ⑤ on the rotating shaft ⑥ then, push the adjusting lever ① to the arrow direction “a”. Secondary. move the whole bobbin winder to the arrow direction “C” and stop it at the position where the empty bobbin is rotated then, tighten the setscrews ③ and ④ of the bobbin winder. This is the proper position of the bobbin winder.



7-8 Adjustment of the work holder

- (1) Turn the power switch off and open the top cover of the machine head.

- (2) Loosen the screw ② and adjust position of the solenoid ①. If the solenoid ① moves arrow-A direction, the work holder lift becomes higher, and if moves arrow-B direction, the work holder lift becomes lower.

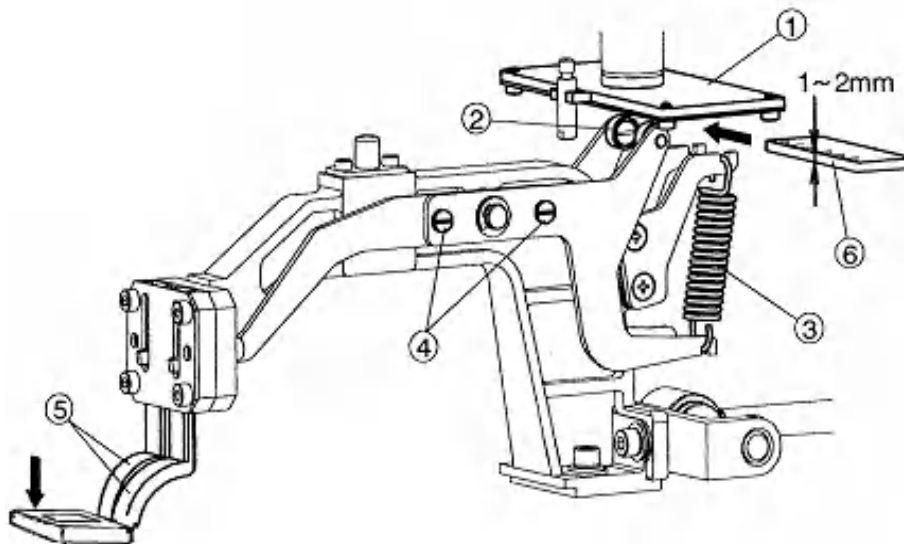


- (3) After the adjustment, tighten the screw ② securely.



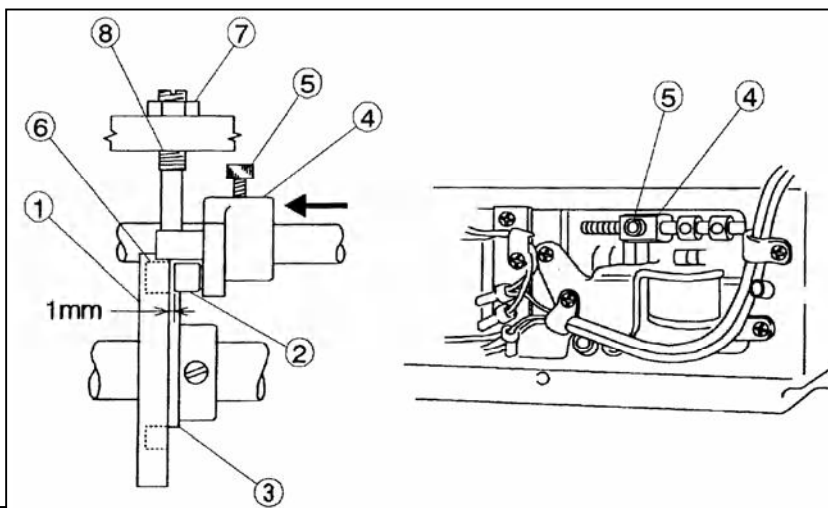
When the clamp goes down, the clearance between the pressure plate (NO.1) and the roller (NO.2) should be adjusted more than 1mm.

- (1) Turn the power switch off. And remove two springs (3).
- (2) Loosen four setscrews (4).
- (3) Put the clamps (right / left) (5) down.
- (4) Insert the spacer (1~2mm thick) (6) into the position between and pressure plate (1) and the roller (2), and tighten the setscrews (4) securely.
- (5) Remove the spacer (6), and set the springs (3).



7-9 Adjustment of the trimmer cam follower

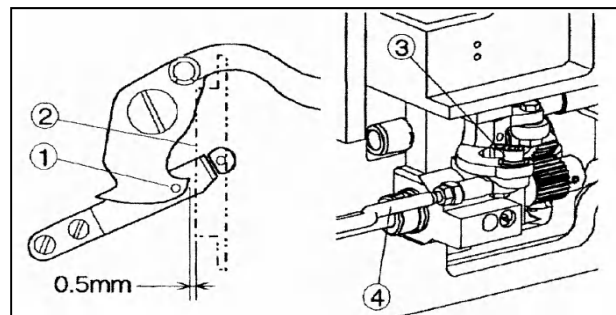
- (1) Turn the power switch OFF and remove the top cover.



- (2) Under the sewing machine regular stop condition (the needle stop position is upper and the take up lever stop position is highest), loosen the setscrew ⑤ of the cam follower lever ④ and adjust the cam follower ② to be positioned to contact with the shoulder portion ③ of the trimmer cam ① with having about 1 mm clearance between the cam follower ② and the trimmer cam ①. After this adjustment, tighten the setscrew ⑤ of the cam follower lever ④.
- (3) Push the cam follower lever ④ by hand to the arrow direction and make sure that the cam follower ② is engaged into the cam groove ③ smoothly.
- (4) If the cam follower ② is not engaged smoothly, under confirming with the condition which the cam follower ② contacts with the shoulder portion ③ of the trimmer cam ①, loosen the nut ⑦ and tighten the stopper screw ⑧ until it touches with the stopper of the cam follower lever ④ then, loosen the stopper screw ⑧ back about 1/3 turn and fix the nut ⑦ firmly.

7-10 Adjustment of the position for the movable knife point

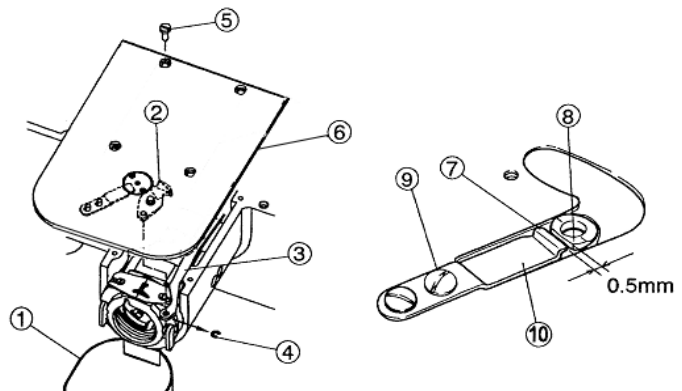
- (1) Tilt the sewing machine head to the left to be able to see the bottom component parts.
- (2) Open the cylinder cover.
- (3) Check with the point ① of the movable knife whether it is located



- at the position apart 0.5mm from the front face of the hook retainer ②.
- (4) For the adjustment of the movable knife point ①, loosen the adjusting screw ③ and move the rod end ④ right and left then, adjust the position of the movable knife point.
- (5) After the adjustment, tighten the adjusting screw nut ③ securely.

7-11 Adjustment of the fixed knife position

- (1) Open the cylinder cover ①.
- (2) Remove the E-shaped snap ring ④, which engages the movable knife ② and the link ③.
- (3) Loosen the setscrews ⑤ then, remove the sliding plate ⑥.



- (4) Turn the sliding plate ⑥ upside down and loosen two setscrews ⑨ then, adjust the fixed knife ⑩

position to be positioned for the blade edge ⑦ to have the clearance 0.5mm from the edge of the needle plate ⑧.

(5) After the adjustment, tighten the setscrews ⑨ securely.

(6) Put all the parts for this adjustment back to the original locations.

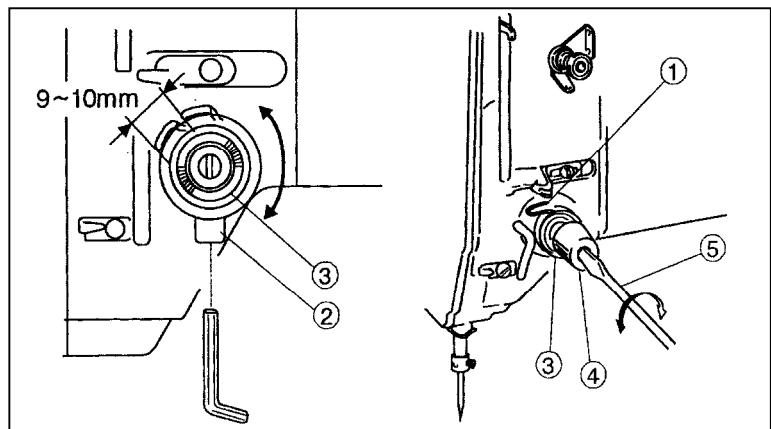
7-12 Adjustment of the thread take up spring swing stroke

Loosen the setscrew ② and turn the whole thread tension regulator ③ then, adjust the thread take up spring swing stroke to be become 9 to 10mm.

After the adjustment, tighten the setscrew ② securely.

7-13 Adjustment of the thread take up spring tension

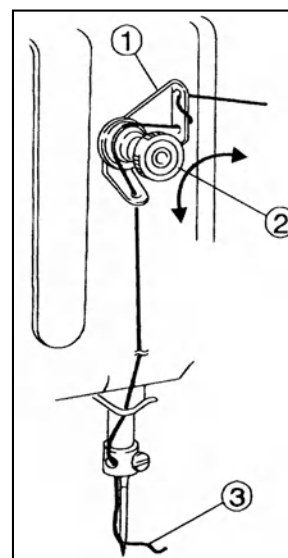
Insert the screw driver ⑤ into the slit ④ of the thread tension regulator ③ and adjust the thread take up spring ① tension. If turn the screw driver to the clockwise, the thread take up spring tension becomes tight. and if turn the screw driver to the counter clockwise. the thread take up spring tension becomes loose.



7-14 Adjustment of the thread tail after the trimming

Adjust the thread tail ③ from the needle after the trimming with turning the nut ② of the pre-tension ①.

If turn the nut ② to the clockwise, the thread tail becomes shorter and if turn the nut ② to the counter-clockwise, the tread tail becomes longer.



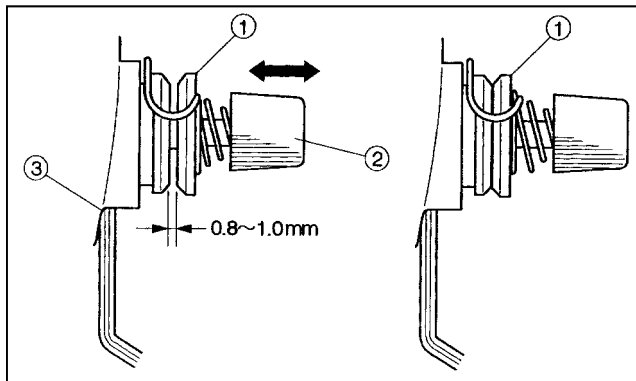
7-15 Cancellation of the trimming function

If the automatic trimming is not required during the sewing operation, cancel the Trimming function with the setting panel of the control box.

7-16 Adjustment of the upper thread tension release

[NOTE] (a) If the upper thread tension release does not work properly when the upper thread is trimmed automatically, the thread tail from the needle becomes shorter then, it induces the skip stitch happening or pulling the thread tail out of the needle at the start of the sewing.

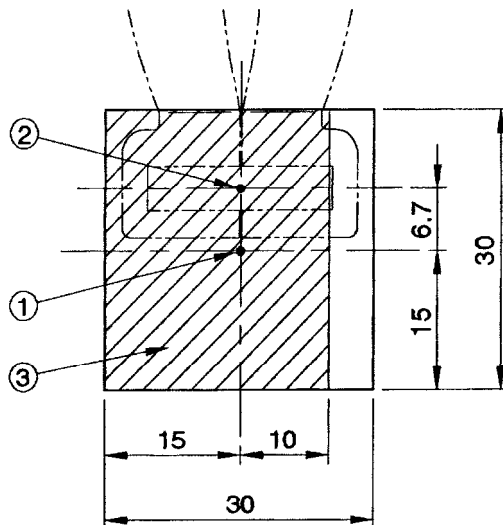
(b) When the upper thread tension release is activated, the discs ① the upper thread tension regulator opens 0.8~1.0mm. This is the normal conduction of the discs ① opening. For this adjustment, take the following procedure.



- (1) Loosen the setscrew ③ of the upper thread tension regulator ② by a hexagonal wrench.
- (2) Adjust the position of the upper thread tension regulator ②.
- (3) Tighten the setscrew ③.

7-17 Adjustment of the mechanical home position

[NOTE]The mechanical home position is fixed at the center of the sewing area when the sewing machine is shipped from the factory. However, it can be moved within the area covered with diagonal lines.



- (1) Center of sewing area
- (2) Standard home position
- (3) Adjustable

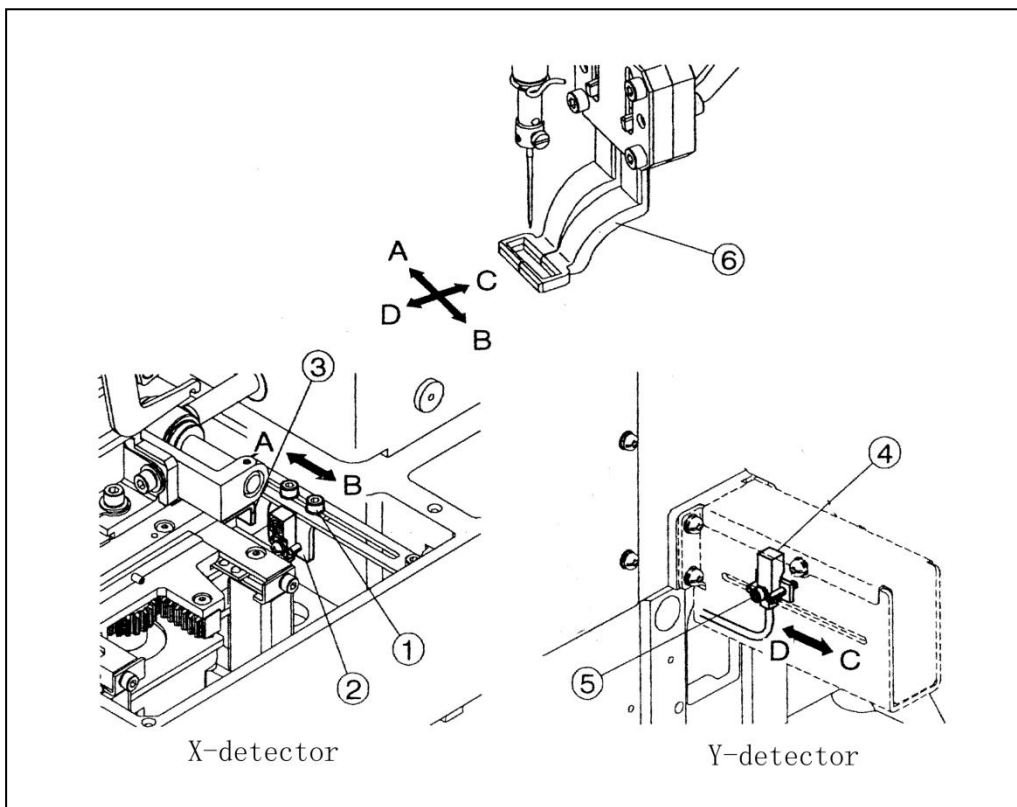
7-16-1. Shifting the mechanical home position to the X direction

- (1) Remove the X-Y cover (right),(left) and X cover.
- (2) Loosen the detector plate fix screws(2 pieces) ①. if move the detector plate ② to the right, the mechanical home position is shifted to the left and if it is moved to the left, the mechanical home position is shifted to the right.
- (3) After the mechanical home position setting, tighten the detector plate fix screws ① securely.

[NOTE] When the original mechanical home position is shifted. Please check the clearance between the X detector plate and the X detector. This clearance should be set within the range of 1.0—1.5 mm.

7-16-2. Shifting the mechanical home position to the Y direction

- (1) Loosen the Y-detector setscrew ⑤.
- (2) If move the Y-detector ④ to the front, the mechanical home position is shifted to the backward. If it is moved to the backward. the mechanical home position is shifted to the front.
- (3) After the mechanical home position setting, tighten the screw ⑤ securely.



7-18 7-17 Adjustment of the X-Y table contact pressure

[NOTE] When take the X-Y table apart or the X-Y table became weak in the joints, adjust the X-Y table contact pressure. The adjustment should be made the X-Y table movement as smooth as possible without having play. If the X-Y table contact pressure is too tight, the over pressure induces the out

of control on the X-Y table movement.

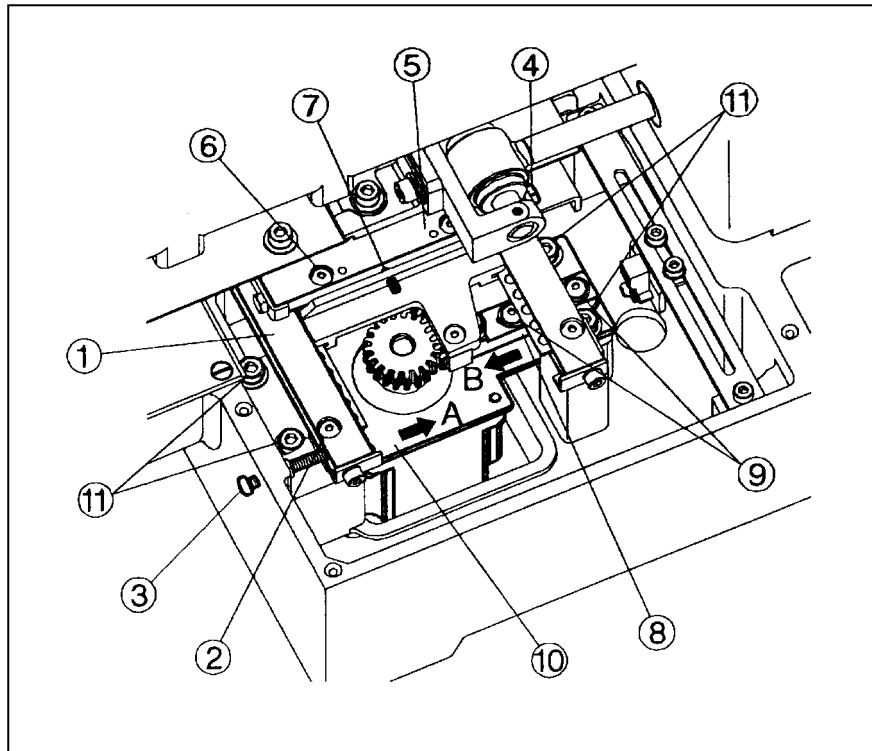
- (1) Remove the right and left cover of the machine bed casting.
- (2) Loosen the setscrew(2 pieces) ② so that the X fixed race ① can be moved slightly.
- (3) If tighten the both right and left contact presser adjusting screws ③, the X table contact pressure is increased.
- (4) Loosen the hexagonal setscrew ④.
- (5) Loosen the setscrews(2 pieces) ⑥ so that the Y fixed race ⑤ can be moved slightly.
- (6) If tighten the contact pressure adjusting screws ⑦, the Y table contact pressure is increased.
- (7) After the adjustment, tighten the setscrews ② and ⑤ securely.

7-19 7-18 Adjustment of the X-Y t stepping motor position

7-18-1 Adjustment of the X stepping motor position

- (1) Remove the right cover of the machine bed casting.
- (2) Loosen two bolts ⑨ of the assistant plate ⑧.
- (3) Loosen four bolts ⑪ of the X-stepping motor adapter ⑩.
- (4) Press the X-stepping motor adapter ⑩ to “arrow - A” direction lightly.
- (5) Fasten four bolts ⑪ securely.
- (6) Press the assistant plate ⑧ to “arrow - B” direction lightly.
- (7) Fasten two bolts securely, and put the cover to the original position.

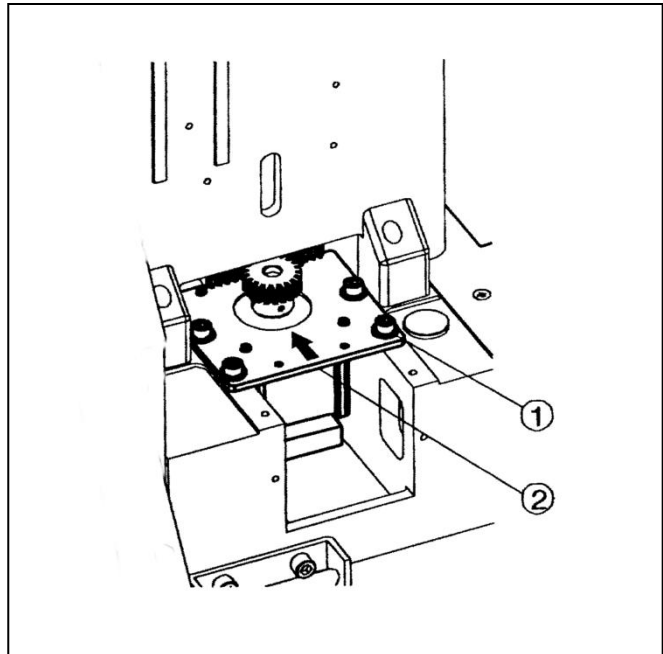
NOTE After the adjustment, please make sure that there is no gap in the gear mechanism.



7-20 7-18-2 Adjustment of Y stepping motor position

- (1) Remove the motor cover.
- (2) Loosen four setscrews ① of the Y-stepping motor adapter ②.
- (3) Press the Y-motor adapter ② to arrow direction lightly.
- (4) Fasten the setscrews ① securely, and put the motor cover to original position.

NOTE After the adjustment, please make sure that there is no gap in the gear mechanism. Please grease gear periodically for reduction of noise or abrasion



★ Please grease gear periodically for reduction of noise or abrasion.

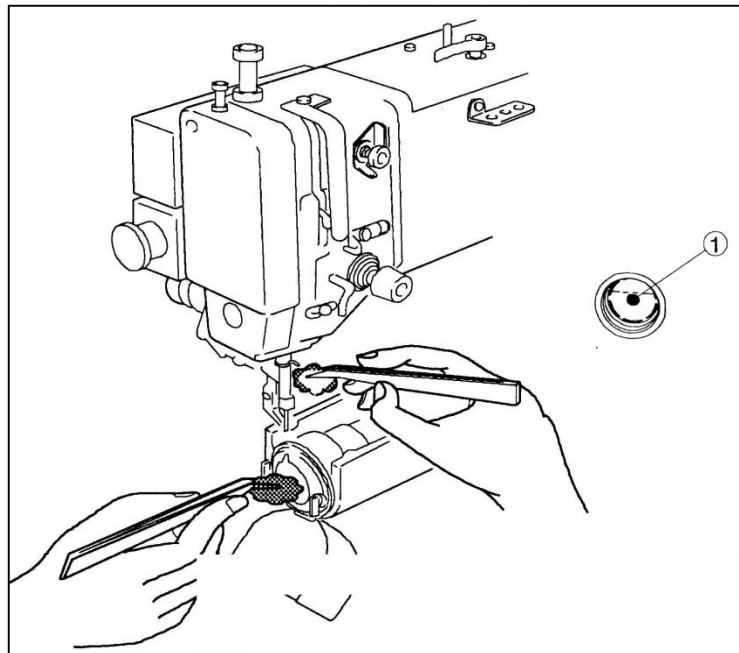
8 MAINTENANCE

Caution ★Please make sure to turn the power switch always OFF when clean up the sewing machine.

★Before or after the sewing operation, clean up the sewing machine and check the Oil level in the oil tank.

8-1 Cleaning

- (1) Turn the power switch OFF.
- (2) Remove the dust and the thread waste sticking around the threading parts or the shuttle hook area.
- (3) Check the oil level in the oil tank. If the oil is under the red mark level supply the oil to be over the red mark level.



8-2 Disposing of oil waste

If the waste oil is full filled in the oil pan, remove the oil pan then, dispose of the waste oil.

9 BAD SEWING CONDITION & ITS CAUSE AND REMEDY

[NOTE] Please fix the troubles during the sewing machine operation with referring to the following instructions. Beside, if the trouble conditions are not coming under these classification, please contact the sewing machine dealers nearby.

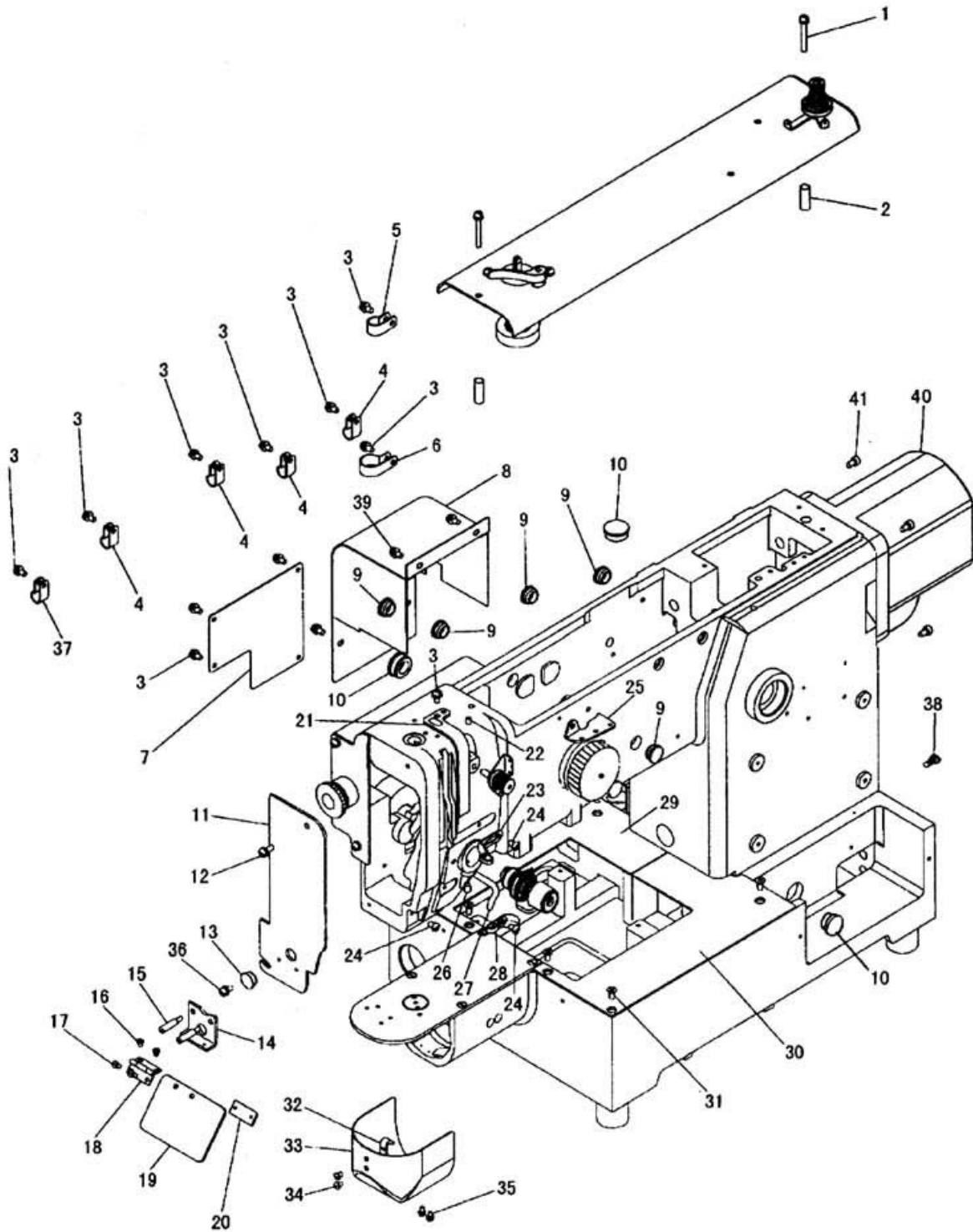
Bad condition	Cause	Remedy	Ref. page & item
1. Upper thread breakage after happens	Poor thread tension	Use better quality thread	—
	Tight upper thread tension	Adjust thread tension	6-3
	Strong thread take up spring	Adjust thread take up spring properly	7-12
	Upper thread is thicker than needle size	Change needle to suitable size	—
	Damages on shuttle hook or drive	Change them new ones or grind them with buffing wheel or grind stone	—
	Damages inside presser foot needle hole	Change it new one or grind it with buffing wheel	—
	Needle and shuttle hook are not in proper timing	Adjust the timing	—
	Thread melts with needle heat	Slow down sewing speed	—
		Use silicon oil	—
Use needle cooler		—	
2. Upper thread is pilled out from needle	Thread tension discs are not opened at trimming	Adjust thread tension release	7-15
	Thread take up spring swings too much	Adjust thread take up spring's swing stroke	7-11
	Upper thread is broken before regular trimming	Adjust fixed knife and needle plate position	7-10
	Needle size is bigger than thread size	Change needle to suitable size	—
	Pre-tension is too tight	Adjust pre-tension	7-13
	Thread guide is in wrong position	Adjust thread guide position properly	7-5
	Needle and shuttle hook are in bad timing	Adjust the timing properly	7-2
	Trimmer timing is not correct	Adjust trimmer cam position	7-8
Adjust movable knife position		7-9	

Bad condition	Cause	Remedy	Ref. page & item
3. Skip stitch happens at start sewing	Too short bobbin thread by bobbin spinning after trimming	Use non racing spring with bobbin	—
	Bobbin thread tension is too tight	Loosen bobbin thread tension spring	6-3
	Thread tail from needle is very short after trimming	Decrease pre-tension	7-13
		Adjust trimmer cam position	7-8
		Make thread take up swing stroke smaller	7-11
		Advance thread tension release timing	Instruction manual
		Adjust thread guide position properly	7-5
4. Thread tail from needle is too long after trimming	Pre-tension is too loose	Make pre-tension tighter	7-13
	Trimmer timing is delayed	Adjust trimmer cam position	7-8
	Upper thread tension release timing is too fast	Delay tension release timing	Instruction manual
	Tread guide is in wrong position	Adjust thread guide position properly	7-5
5. Trimming is not functioned	Trimmer function is canceled	Resume trimmer function	Instruction manual
	Fixed knife is dull	Change it new knife	7-10
	Trimmer solenoid is out of order	Change trimmer solenoid	—
	Skip stitching happens at trimming	Fix skip stitching	7-10
	Trimmer timing is wrong	Adjust trimmer cam position	7-8
6. Skip stitching often happens	Needle and shuttle hook clearance is too big	Adjust needle and shuttle hook timing properly	7-3
	Needle and shuttle hook timing is not correct	Adjust needle and shuttle hook timing properly	7-2
	Needle is bent	Change it new needle	—
	Needle is bent by driver	Adjust needle and diver clearance properly	7-4
	Needle is in wrong position	Amend needle position	7-2

Bad condition	Cause	Remedy	Ref. page & item
7. Stitch forming is loose	Upper thread tension is not tight enough	Increase upper thread tension	6-3
	Thread tension regulator's discs are opened during sewing	Adjust tension regulator position properly	7-15
		Adjust upper tension release position properly	7-15
	Needle and shuttle hook is in wrong	Adjust needle and shuttle hook position	7-2
	Driver and shuttle hook clearance is very small	Adjust clearance between driver and shuttle hook	—
8. Sewing machine does not work even start switch is turned ON	Cables wiring is disconnected	Connect all cables precisely	3
	System software is not loaded	Turn OFF the power and turn ON the power again after some time.	Instruction manual
	Emergency stop switch is kept ON	Release emergency stop switch lock	6-1
9. Work holder does not work	Work holder activate cable is disconnected	Connect the cable precisely	Instruction manual
	Work holder activate cable is not strong enough	Increase work holder pressure	7-7
	Work holder switch is out of order	Change it new work holder switch	—
10. Sewing pattern is distorted	Sewing material is too heavy	Decrease sewing speed	6-2
		Decrease feeding speed	Instruction manual
		Select heave material setting	Instruction manual
	X or Y driving gear clearance is not proper	Adjust X or Y driving gear clearance	7-18
11. Work holder does no stop at home position	X-Y detectors cable are disconnected	Connect X-Y cables precisely	—
	X-Y detectors are out o order(Red pilot lamps do not go on at home position)	Change them new detectors (Make sure red pilot lamps go on at home position)	—
	Detector and detector plate clearance is too big	Adjust the clearance properly	7-17

Bad condition	Cause	Remedy	Ref. page & item
12. Work holder stops at not original home position	Detector and detector plate mounting is loose	Check setscrews and tighten them securely	7-17
	Detector and detector plate clearance is bigger than standard	Adjust detector and detector plate clearance properly	7-17
	Home position correction function is in working	Cancel home position correction function	Instruction manual

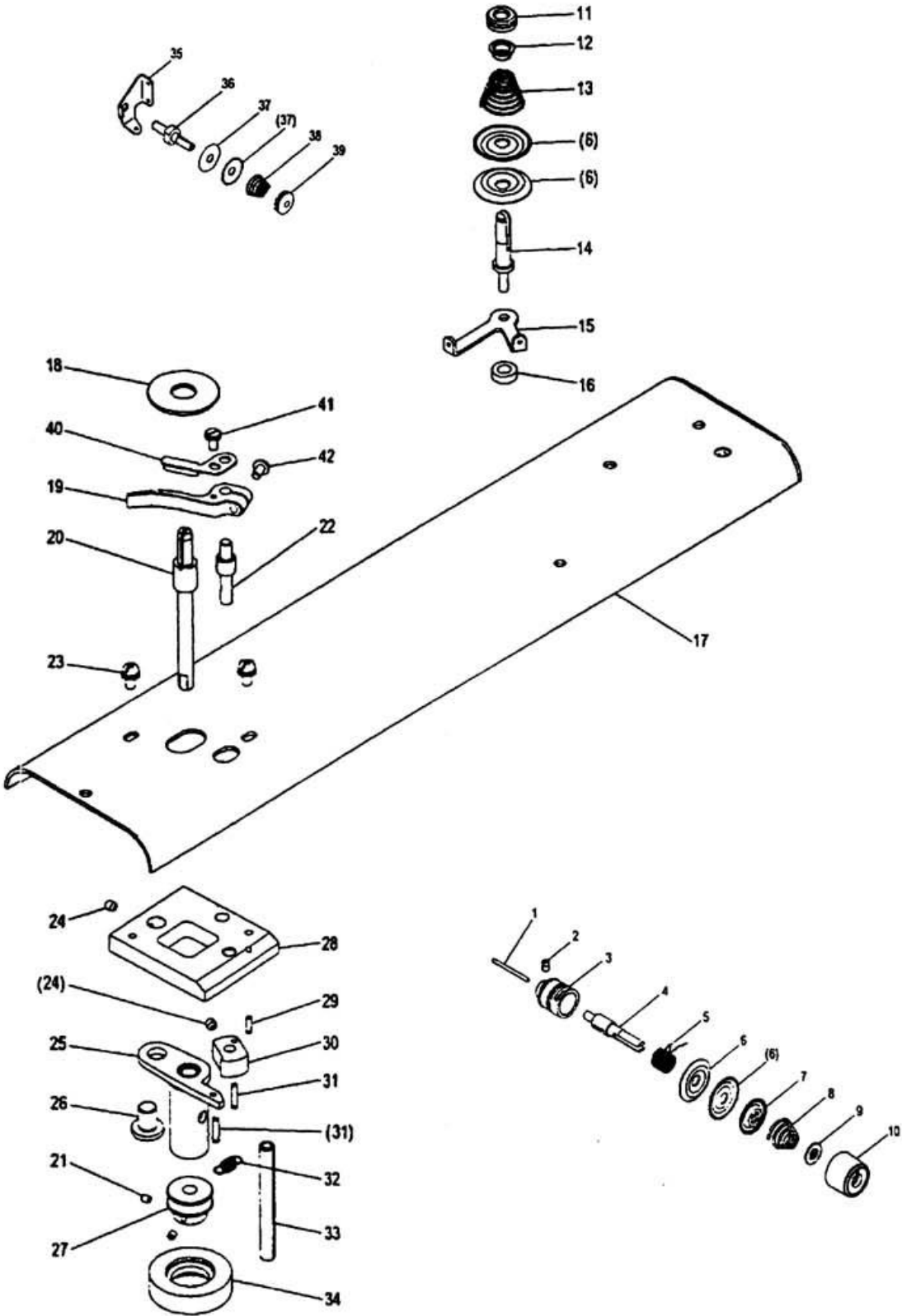
A.ARM BED AND ITS ACCESSORIES (1)



A.ARM BED AND ITS ACCESSORIES (1)

Fig. No.	Part No.	Description	Pcs.	Remarks
A01	HZ11040300	Screw M4 × 30	2	M4 × 30
A02	H6623B8001	Spacer	2	
A03	HZ11040080	Screw M4 × 8	12	M4 × 8
A04	H6650H8001	Nylon clip AB-5N	5	AB-5N
A05	H6648I8001	Nylon clip AB-6N	3	AB-6N
A06	H6647H8001	Nylon clip AB-10N	1	AB-10N
A07	H6611B8001	Cover	1	
A08	H6678B7101	Motor cover	1	
A09	H4715B8001	Rubber plug Φ13	6	Φ13
A10	HA307B0673	Rubber plug Φ19	3	Φ19
A11	H6676B8001	Face cover	1	
A12	HS90329935	Screw M4 × 10	1	M4 × 10
A13	HA307B0674	Rubber plug Φ11.8	1	Φ11.8
A14	H6668B8001	Eye guard bracket	1	
A15	H6669B8001	Pin	2	1/8 (44)
A16	H6670B8001	Screw 1/8(44) × 3.8	2	1/8(44) × 3.8
A17	HA104G0654	Screw 1/8(44) × 6	2	1/8(44) × 6
A18	H6671B8001	Hinge	1	
A19	H6674B8001	Eye guard	1	
A20	H6675B8001	Adapter	1	
A21	H6689B8001	Thread take-up lever guard	1	
A22	H431040060	Screw M4 × 6	1	M4 × 6
A23	HA600B2050	Thread guide	1	
A24	HZ11040060	Screw M4 × 6	4	M4 × 6
A25	HA700B2050	Thread guide	1	
A26	H431050080	Screw M5 × 8	1	M5 × 8
A27	H3000B2130	Thread guide	1	
A28	HA106B0675	Thread guide	1	
A29	H6684B8001	X Cover plate (L)	1	
A30	H6683B8001	X Cover plate (R)	1	
A31	HZ11040080	Screw M4 × 8	6	M4 × 8
A32	H6691B8001	Latch	1	
A33	H6693B8001	Cylinder cover	1	
A34	H6692B8001	Screw 9/64(40) × 3.2	2	9/64(40) × 3.2
A35	HZ11030060	Screw M3 × 6	2	M3 × 6
A36	H6623G8001	Screw M4 × 10	1	M4 × 10
A37	H6645H8001	Nylon clip AB-4N	1	AB-4N
A38	HS90201408	Screw M4 × 8	1	M4 × 8
A39	HZ11040080	Screw M4 × 8	6	M4 × 8
A40	HK42C58001	Motor cover	1	
A41	H415050200	Screw M5 × 20	4	M5 × 20

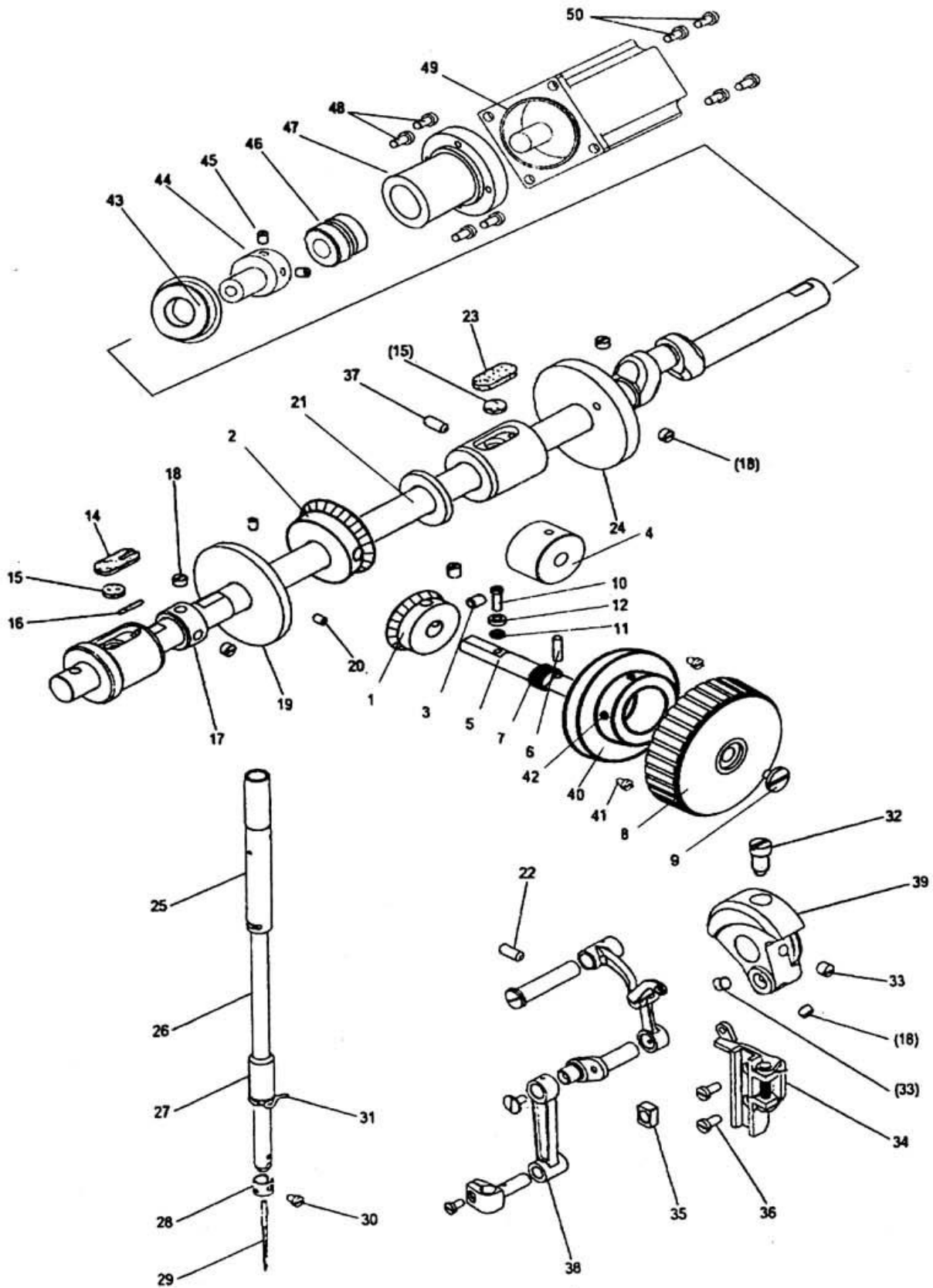
B.ARM BED AND ITS ACCESSORIES (2)



B.ARM BED AND ITS ACCESSORIES (2)

Fig. No.	Part No.	Description	Pcs.	Remarks
B01	HA115B0709	Pin	1	
B02	HA115B0708	Screw 9/64(40) × 4	1	
B03	HA310B0703	Regulator casing	1	
B04	HA115B0701	Thread tension stud	1	
B05	HA115B0706	Thread take-up spring	1	
B06	HA115B0705	Thread tension discs	4	
B07	HA310B0702	Disc retaining plate	1	
B08	H6675C8001	Thread tension spring	1	
B09	HA115B7010	Thumb nut revolution stopper	1	
B10	HA310B0701	Thumb nut	1	
B11	H660GB8001	Thumb nut	1	
B12	H660FB8001	Spring guide	1	
B13	H660EB8001	Thread tension spring	1	
B14	H660HB8001	Thread tension stud	1	
B15	H6662B8001	Thread guide	1	
B16	H6663B8001	Spacer	1	
B17	H6640B8001	Top cover	1	
B18	H6656B8001	Spacer	1	
B19	H6651B8001	Lever	1	
B20	HF15401022	Driven shaft	1	
B21	H431030040	Screw M3 × 4	2	M3 × 4
B22	H6649B8001	Shaft	1	
B23	HZ11040100	Screw M4 × 10	2	M4 × 10
B24	H431040040	Screw M4 × 4	2	M4 × 4
B25	HF15401021	Lever	1	
B26	H6650B8001	Pin	1	
B27	H6657B8001	Wheel	1	
B28	H6644B8001	Bracket	1	
B29	H6659B8001	Pin $\Phi 2.5 \times 8$	1	$\Phi 2.5 \times 8$
B30	H6652B8001	Cam	1	
B31	H6660B8001	Pin $\Phi 2.5 \times 12$	2	$\Phi 2.5 \times 12$
B32	H6653B8001	Spring	1	
B33	H6655B8001	Pin $\Phi 6 \times 56$	1	$\Phi 6 \times 56$
B34	H6658B8001	Tire	1	
B35	HA710B0674	Thread guide	1	
B36	HA710B0673	Thread tension stud	1	
B37	HA112B0693	Thread tension discs	2	
B38	HA710B0672	Thread tension spring	1	
B39	HA710B0671	Thumb nut	1	
B40	H662EB8001	Adjuster plate	1	
B41	H662DB8001	Screw 9/64(40) × 6.5	1	9/64(40) × 6.5
B42	H3100B2100	Screw 9/64(40) × 11	1	9/64(40) × 11

C.SEWING MECHANISM (1)



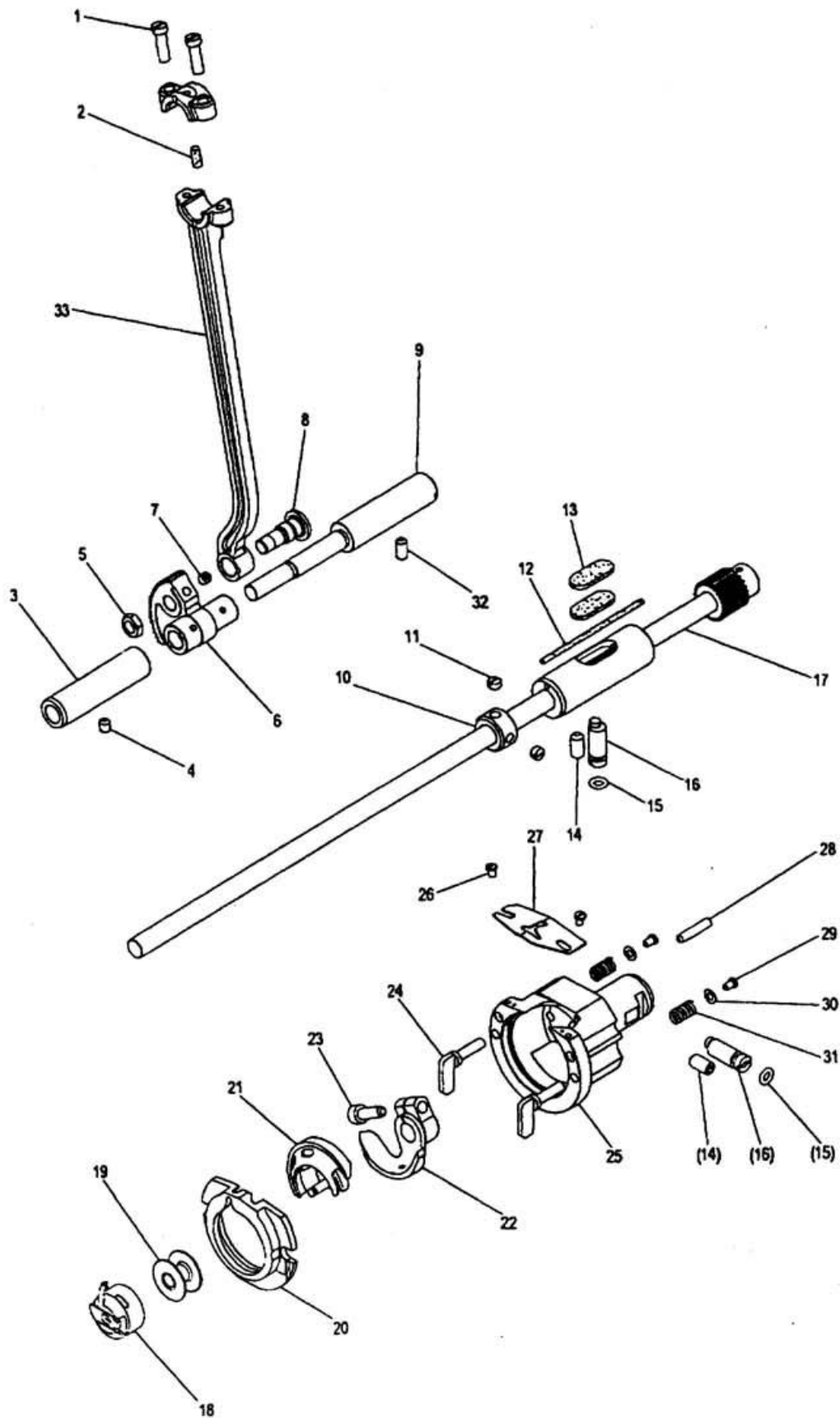
C.SEWING MECHANISM (1)

Fig. No.	Part No.	Description	Pcs.	Remarks
C01	HF113D2122	Bevel gear for hand wheel shaft	1	
C02	HF113D2112	Bevel gear for arm shaft	1	
C03	HA108C0663	Set screw	4	
C04	HF15401016	Hand wheel bushing	1	
C05	HF15401015	Hand wheel shaft	1	
C06	H609025120	Pin	1	Φ3 × 12
C07	H4767E8001	Spring	1	
C08	HB42E52081	Hand wheel	1	
C09	H5311F8001	Screw	1	
C10	HF15401013	Screw	1	
C11	HF15401012	Washer	1	
C12	HF15401014	Bearing	1	
C14	H2009B0743	Felt	1	
C15	H6616B8001	Felt	2	
C16	H2009B0742	Felt	1	
C17	HA108G0661	Collar	1	
C18	HA105D0662	Screw 1/4(40) × 4	5	1/4(40) × 4
C19	HF15402008	Pulley	1	
C20	H431040060	Screw M4 × 6	2	M4 × 6
C21	HM004C8001	Drive shaft	1	
C22	HS90101012	Screw M5 × 12	1	M5 × 12
C23	H2009B0731	Felt	1	
C24	H6606F8001	Thread trimmer cam	1	
C25	H6612B8001	Neddle bar bushing(upper)	1	
C26	H6624C8001	Neddle bar	1	
C27	H6613B8001	Neddle bar bushing(lower)	1	
C28	H6625C8001	Thread guide	1	
C29	HM010C8001	Neddle DP × 17#18	1	DP × 17#18
C30	HA100C2170	Screw 1/8(44) × 4.5	1	1/8(44) × 4.5
C31	HA300C2070	Thread guide	1	
C32	HA100C2070	Set screw 9/32(28)	1	9/32(28)
C33	HA307C0662	Screw 1/4(40) × 6	2	1/4(40) × 6
C34	HM005C7101	Guide assy	1	
C35	HA100C2200	Square block	1	
C36	H6623C8001	Screw M4 × 8	2	M4 × 8
C37	H901310010	Screw M5 × 10	1	M5 × 10
C38	H6611C7101	Thread take-up lever assy	1	
C39	H6607C8001	Crank	1	
C40	HF15401001	Set plate	1	
C41	H415050120	Screw M5 × 12	3	M5 × 12
C42	H3210F0681	Screw M5 × 6	2	M5 × 6
C43	H3205J0662	Bearing	1	6204Z ZNR
C44	HF15402001	Bushing	1	

C.SEWING MECHANISM (1)

Fig. No.	Part No.	Description	Pcs.	Remarks
C45	H431040060	Screw	2	
C46	HB2152C072	Clutch assy	1	
C47	HF15402002	Motor base	1	
C48	H415050200	Screw M5 × 20	4	M5 × 20
C49	HF15402003	Sevor motor	1	
C50	H415050200	Screw M5 × 16	4	M5 × 16

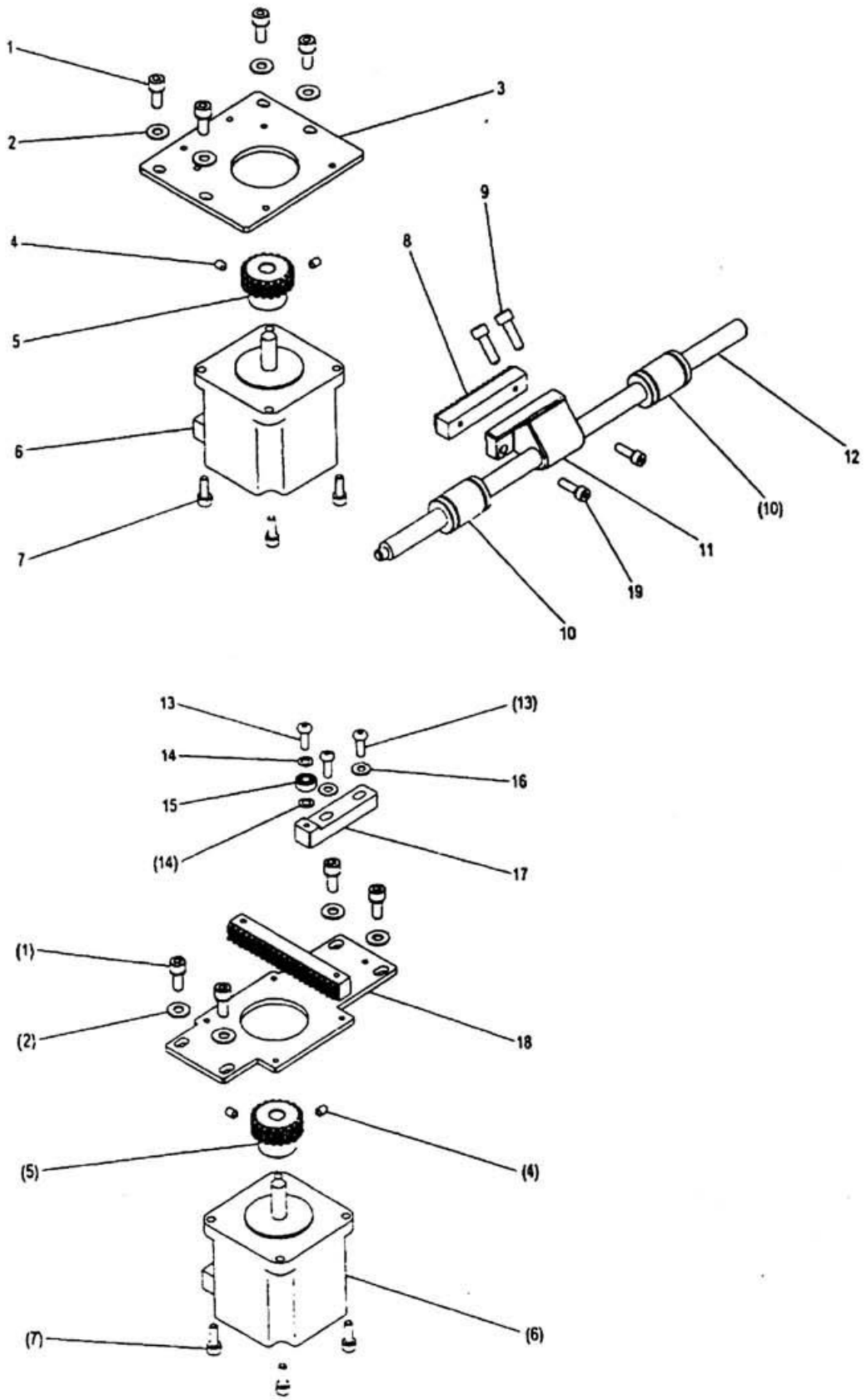
D.SEWING MECHANISM (2)



D.SEWING MECHANISM (2)

Fig. No.	Part No.	Description	Pcs.	Remarks
D01	HA304G0656	Screw 3/16(28) × 15	2	3/16(28) × 15
D02	H6634C8001	Felt	1	
D03	H6628B8001	Bushing	1	
D04	HS90101006	Screw M5 × 6	1	M5 × 6
D05	H2010J0066	Nut 9/32(28)	1	9/32(28)
D06	H6631C8001	Sector gear	1	
D07	H431050050	Screw M5 × 5	1	M5 × 5
D08	H6630C8001	Screw 9/32(28)	1	9/32(28)
D09	H6635C8001	Rock shaft	1	
D10	H6670C8001	Collar	1	
D11	HA305E0662	Screw 15/64(28) × 4.5	2	15/64(28) × 4.5
D12	H6627B8001	Oil braid	1	
D13	H2009B0743	Felt	2	
D14	HS90131112	Screw M6 × 12	2	M6 × 12
D15	HA115B7011	O-ring	2	
D16	H6648C8001	Eccentric shaft	2	
D17	H6637C7101	Hook shaft assy	1	
D18	H6655C8001	Bobbin case	1	SC181
D19	H6656C8001	Bobbin	1	
D20	H6674C8001	Hook retaine	1	
D21	H6673C8001	Inner hook	1	SH181
D22	H6654C8001	Hook driver	1	
D23	HS90321016	Bolt M5 × 16	1	M5 × 16
D24	H6646C8001	Hook clamp	2	
D25	H6642C8001	Outer hook	1	
D26	H6658C8001	Screw 1/8(40) × 4	2	1/8(40) × 4
D27	H6657C8001	Thread guide	1	
D28	H6651C8001	Pin M6-4 × 18	1	
D29	H6643C8001	Screw 1/8(44) × 4.5	2	1/8(44) × 4.5
D30	H6644C8001	Washer	2	
D31	H6645C8001	Spring	2	
D32	HS90101012	Screw M5 × 12	1	M5 × 12
D33	H6628C7101	Connecting rod assy	1	

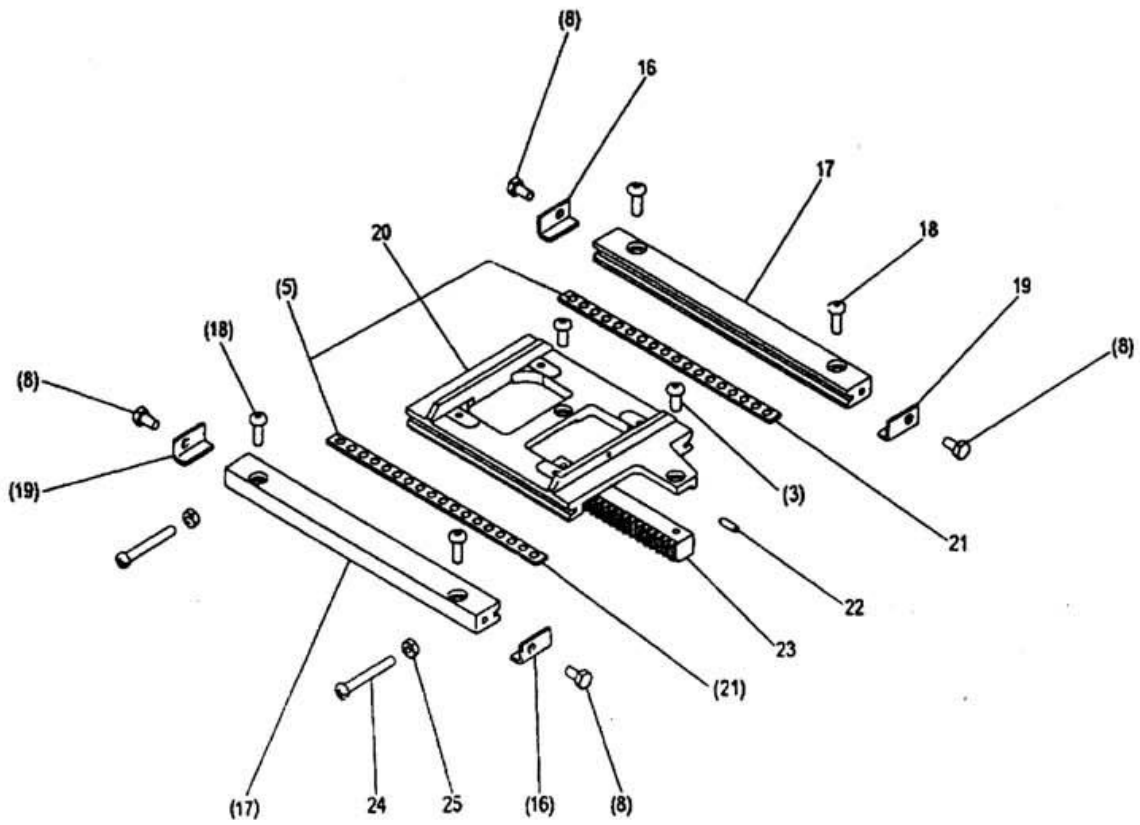
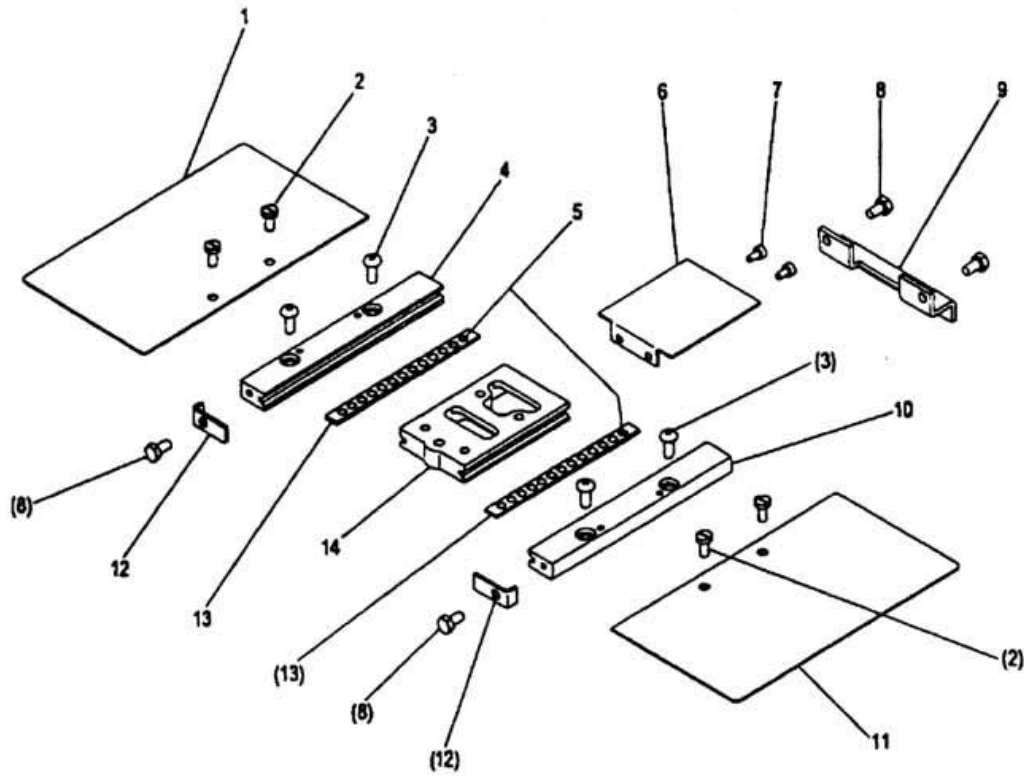
E.X-Y MECHANISM (1)



E.X-Y MECHANISM (1)

Fig. No.	Part No.	Description	Pcs.	Remarks
E01	H415050120	Bolt M5 × 12	8	M5 × 12
E02	H6686D8001	Washer 5	8	M5
E03	H6646D8001	Motor mounting plate Y	1	
E04	H431040060	Screw M4 × 6	4	M4 × 6
E05	H6631D8001	Pinion gear	2	
E06	HF15403010	Stepping motor	2	
E07	H415040120	Bolt M4 × 12	8	M4 × 12
E08	H6650D8001	Rack Y	1	
E09	H415050160	Bolt M5 × 16	2	M5 × 16
E10	H6623B8001	Ball bushing 10	2	M10
E11	H6649D8001	Rack adapter Y	1	
E12	H6653D8001	Linear shaft Y	1	
E13	H416040120	Bolt M4 × 12	3	M4 × 12
E14	H6684D8001	Washer 4	2	M4
E15	H6636D8001	Ball bearing	1	
E16	H6685D8001	Washer 4	2	M4
E17	H6635D8001	Bearing supporter	1	
E18	H6634D8001	Motor mounting palte X	1	
E19	H6693D8001	Bolt M4 × 14	2	M4 × 14

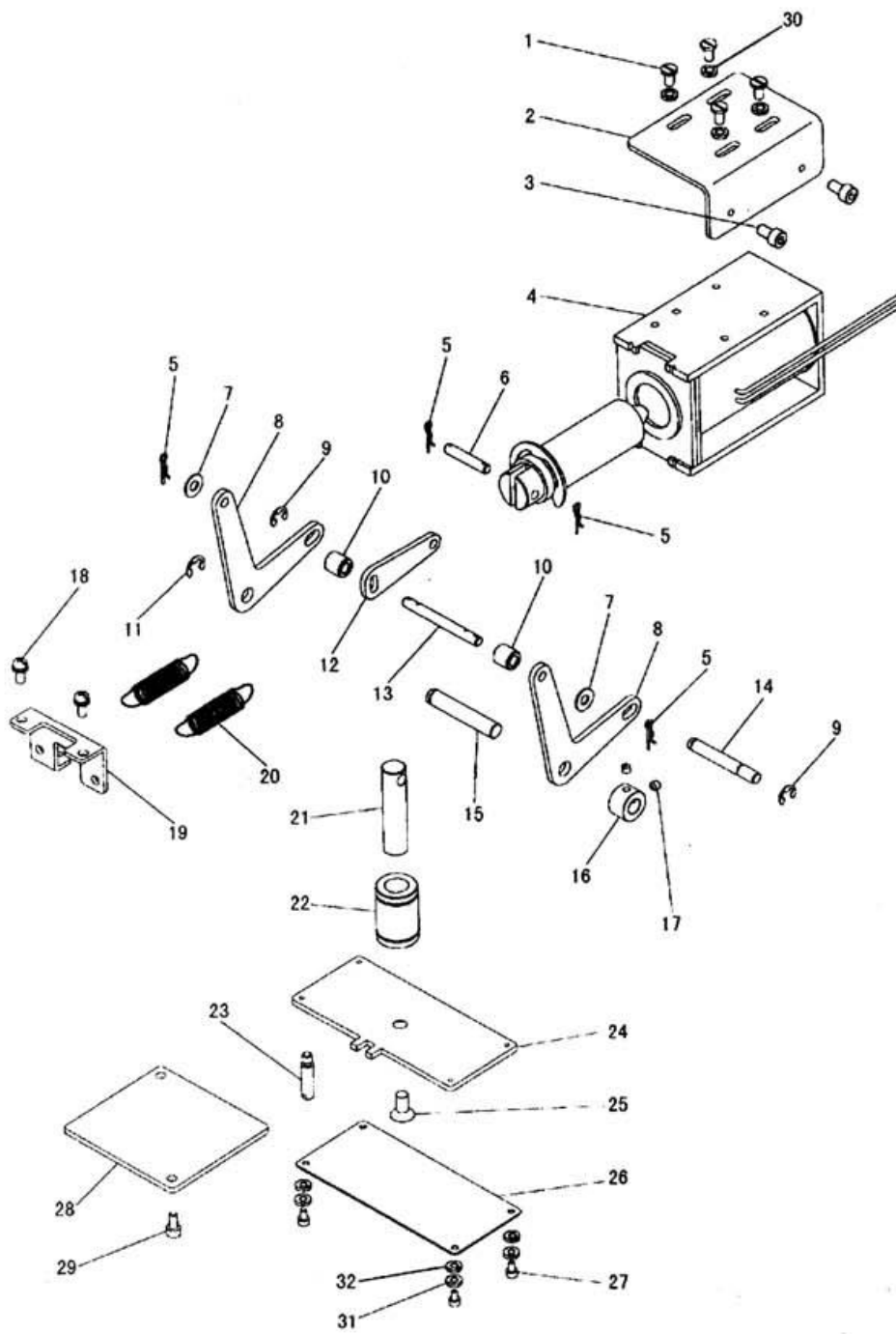
F.X-Y MECHANISM (2)



F.X-Y MECHANISM (2)

Fig. No.	Part No.	Description	Pcs.	Remarks
F01	H6685B8001	Cover L	1	
F02	HA70264C06	Screw 9/64(40) × 8	4	9/64(40) × 8
F03	H416040100	Bolt M4 × 10	6	M4 × 10
F04	H6615D8001	Fixed race Y(L)	1	
F05	H6618D8001	Steel ball 5/32	62	5/32
F06	H6623D8001	Cover plate Y	1	
F07	H415030060	Bolt M3 × 6	2	M3 × 6
F08	H103040080	Bolt M4 × 8	8	M4 × 8
F09	H6620D8001	Rear stopper Y	1	
F10	H6614D8001	Fixed race Y(R)	1	
F11	H6686B8001	Cover R	1	
F12	H6617D8001	Front stopper Y	2	
F13	H6613D8001	Retainer Y	2	
F14	H6619D8001	Movable race Y	1	
F16	H6611D8001	Stopper X	2	
F17	H6609D8001	Fixed race X	2	
F18	H416040120	Bolt M4 × 12	4	M4 × 12
F19	H6610D8001	Stopper X	2	
F20	H6606D8001	Movable race X	1	
F21	H6608D8001	Retainer X	2	
F22	H431030100	Screw M3 × 10	1	M3 × 10
F23	H6621D8001	Rack X	1	
F24	HZ11040300	Screw M4 × 30	2	M4 × 30
F25	H003001040	Nut M4	2	M4

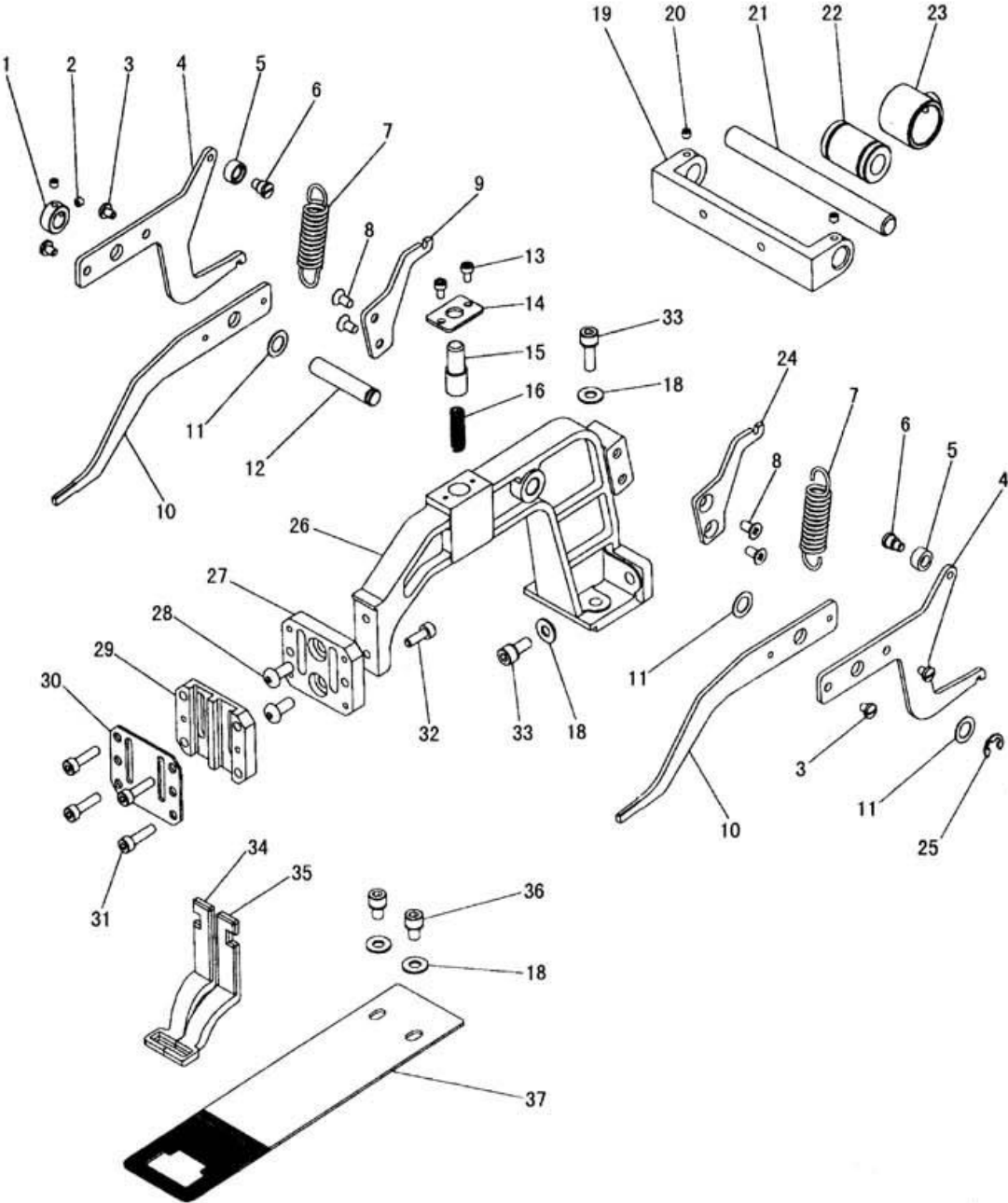
G.SOLENOID MECHANISM



G.SOLENOID MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
G01	HA700B2060	Screw 11/64 (40) × 8	4	11/64 (40) × 8
G02	H6608E8001	Bracket	1	
G03	HS90321010	Bolt M5 × 10	2	M5 × 10
G04	H6609E7101	Solenoid assy	1	
G05	H6618E8001	Snap pin R5	4	
G06	H6617E8001	Pin A	1	
G07	H6686D8001	Washer 5	2	5
G08	H6621E8001	Lever	2	
G09	H007013050	E-type retaining ring 5	2	E-5
G10	H6620E8001	Collar	2	
G11	H007013060	E-type retaining ring 6	1	E-6
G12	H6616E8001	link	1	
G13	H6619E8001	Pin B	1	
G14	H6629E8001	Pin C	1	
G15	H6625E8001	Pin D	1	
G16	H6627E8001	Collar	1	
G17	H3000D2030	Screw 11/64 (40)	2	11/64 (40)
G18	HA19039335	Screw M4 × 10	2	M4 × 10
G19	H6623E8001	Holder	1	
G20	H6622E8001	Spring	2	
G21	H6632E8001	Shaft	1	
G22	H6634B8001	Ball bushing	1	
G23	H6635E8001	Guide pin	1	
G24	H6633E8001	Pressure plate	1	
G25	HS90328112	Bolt M6 × 12	1	M6 × 12
G26	H662GE8001	Cover	1	
G27	HS90321902	Bolt M3 × 5	4	M3 × 5
G28	H6636E8001	Support plate	1	
G29	HS90329934	Bolt M4 × 8	2	M4 × 8
G30	H663FE8001	Washer 4	4	4
G31	H668CE8001	Washer 3	4	3
G32	H005008030	Spring washer 3	4	3

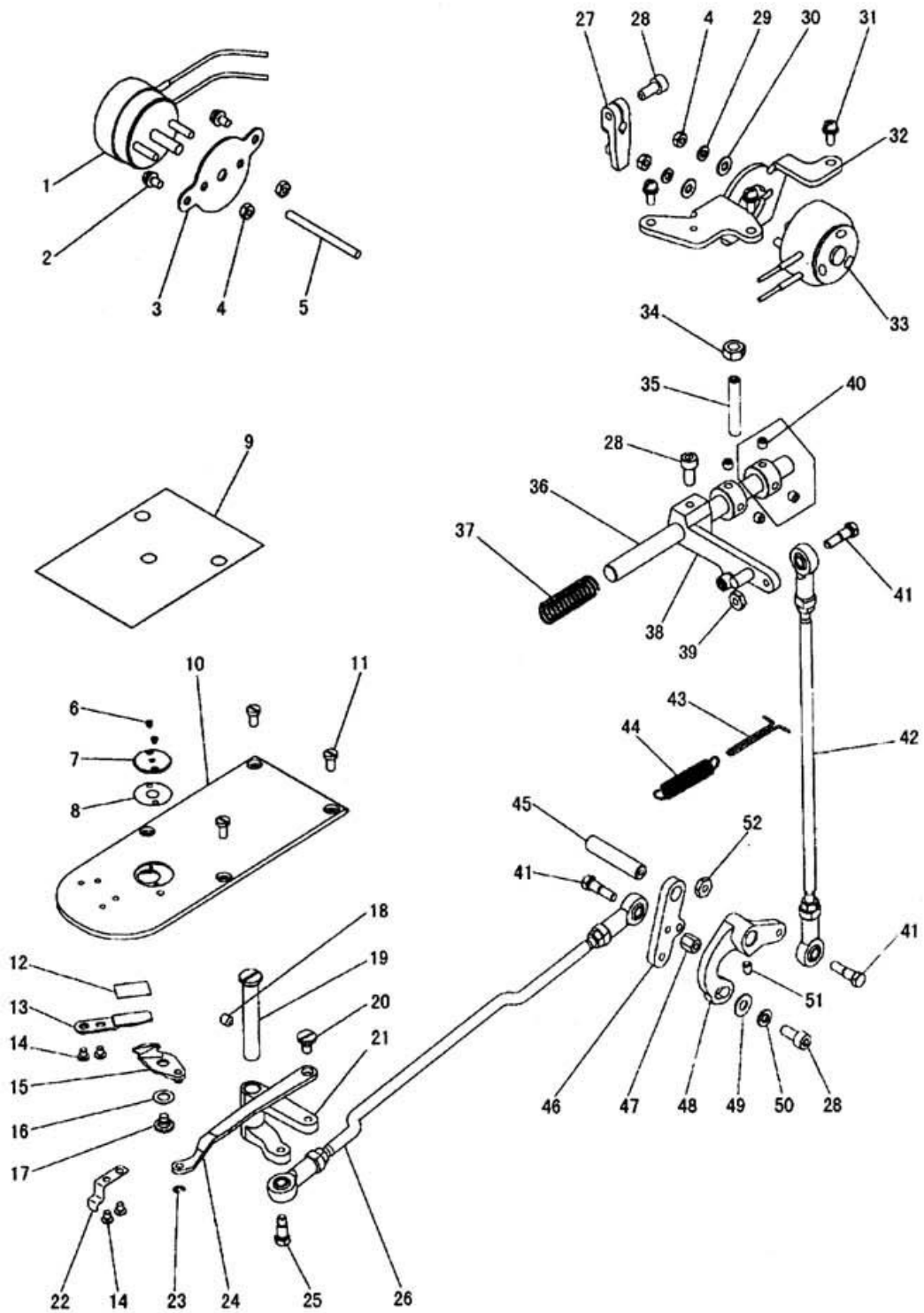
I.PRESSER FOOT MECHANISM



I.PRESSER FOOT MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
I01	HA712N0696	Collar	1	
I02	H3410C3019	Screw 9/64 (40) ×3.5	2	9/64 (40) × 3.5
I03	H6656E8001	Screw 9/64 (40) ×5	4	9/64 (40) × 5
I04	H6653E8001	Pressure lever	2	
I05	H6654E8001	Roller	2	
I06	H6655E8001	Screw 11/64 (40)	2	11/64 (40)
I07	H6651E8001	Spring	2	
I08	H660JB8001	Screw M4×8	4	M4×8
I09	H6649E8001	Spring hook L	1	
I10	H6657E8001	Pressure lever M	2	
I11	H6667E8001	Washer	3	
I12	H6666E8001	Pin	1	
I13	HS90321903	Bolt M3×6	2	M3×6
I14	H6646E8001	Hole plate	1	
I15	H6645E8001	Slider	1	
I16	H6693E8001	Spring	1	
I18	H6686D8001	Washer 5	6	5
I19	H6679E8001	Bracket	1	
I20	HS90131909	Screw M4×4	2	M4×4
I21	H6683E8001	Shaft	1	
I22	H6623B8001	Ball bushing 10	1	
I23	H6682E8001	Bearing housing	1	
I24	H6648E8001	Spring hook R	1	
I25	H007013060	E-type retaining ring 6	1	E- 6
I26	H6642E8001	Work holder arm	1	
I27	H6643E8001	Work holder guide base	1	
I28	HA19115502	Bolt M5×12	2	M5×12
I29	H6670E8001	Work holder guide	1	
I30	H6671E8001	Cover	1	
I31	HS90321938	Bolt M4×16	4	M4×16
I32	HS90321936	Bolt M4×12	2	M4×12
I33	HS90329012	Bolt M5×14	4	M5×14
I34	H6674E8001	Clamp foot L	1	
I35	H6673E8001	Clamp foot R	1	
I36	HA19041852	Bolt M5×8	2	M5×8
I37	H6685E8001	Feed plate	1	

J.THREAD TRIMMING MECHANISM



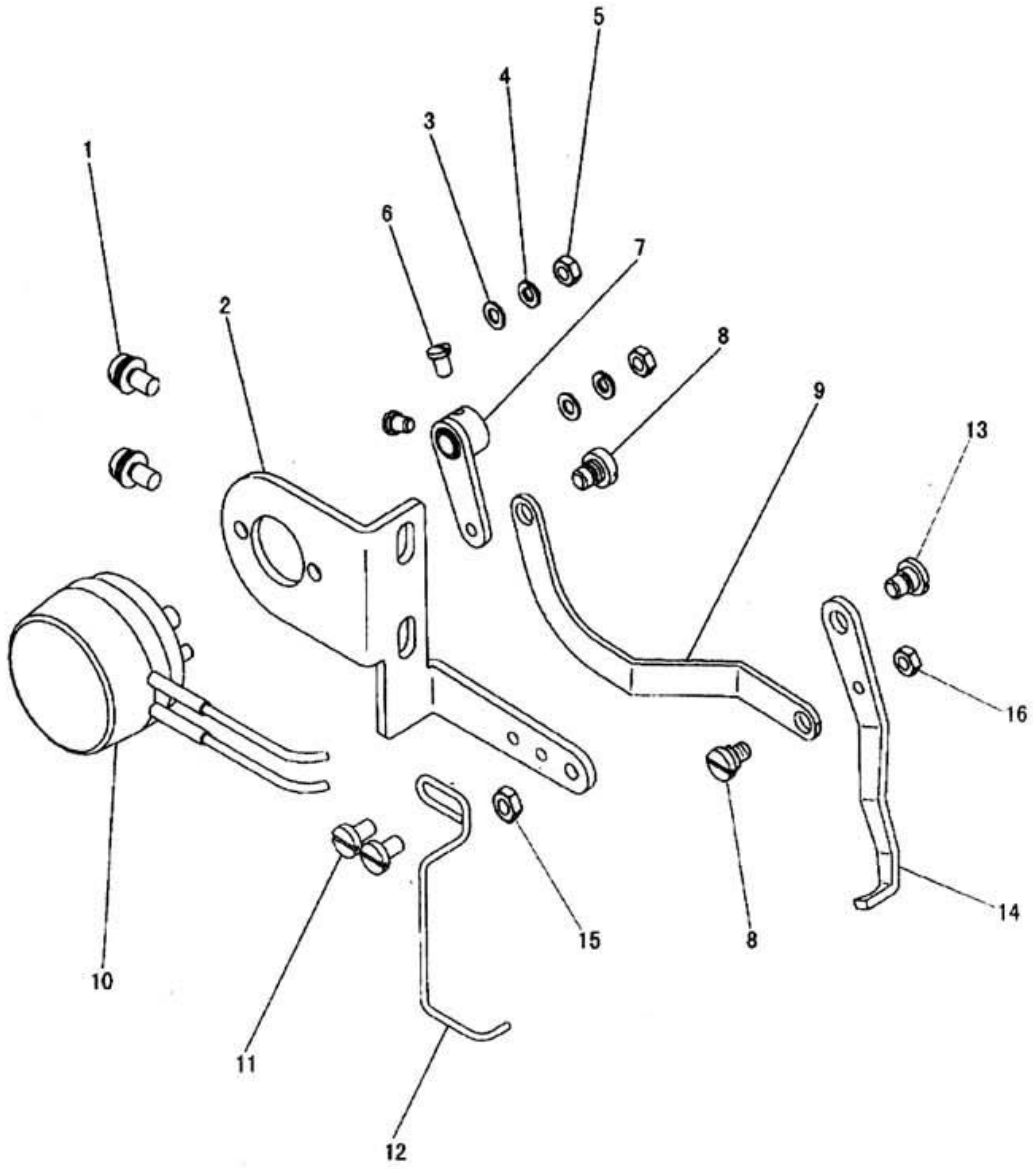
J.THREAD TRIMMING MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
J01	H6685F7101	Solenoid (thread release)	1	
J02	HA19039334	Screw M4×8	2	M4×8
J03	H6693F8001	Solenoid mounting plate	1	
J04	H6683D8001	Nut M4	2	M4
J05	H6683F8001	Pin	1	
J06	H6675F8001	Screw 3/32 (56) × 2.8	2	3/32 (56) × 2.8
J07	H6676F8001	Needle plate	1	
J08	H6677F8001	Spacer	1	
J09	H6686J8001	Film sheet	1	
J10	H6681F8001	Slide plate	1	
J11	H6623C8001	Screw M4×8	4	M4×8
J12	H6695F8001	Spacer	1	
J13	H6673F8001	Fixed knife	1	
J14	H6692B8001	Screw 9/64 (40) × 3.2	4	9/64 (40) × 3.2
J15	H6670F7101	Movable knife	1	
J16	H6679F8001	Wave washer 6	1	6
J17	H6678F8001	Screw 11/64 (40)	1	11/64 (40)
J18	HS90101006	Screw M5×6	1	M5×6
J19	H6664F8001	Stepped pin	1	
J20	H6666F8001	Screw 3/16 (28)	1	3/16 (28)
J21	H6658F8001	Knife driving crank (3)	1	
J22	H6680F8001	Leaf spring	1	
J23	H007013025	E-type retaining ring 2.5	1	E 2.5
J24	H6667F8001	Link	1	
J25	H6659F8001	Bolt 11/64 (40)	1	11/64 (40)
J26	H6660F7101	Connecting rod (horizontal)	1	
J27	H6611F8001	Crank	1	
J28	HS90321012	Bolt M5×12	3	M5×12
J29	H6613F8001	Spring washer 4	4	4
J30	H6685D8001	Washer 4	4	4
J31	HA19039335	Screw M4×10	3	M4×10
J32	H6609F8001	Solenoid bracket	1	
J33	H6615F7101	Solenoid (thread trim)	1	
J34	H003001060	Nut M6	1	M6
J35	HS90131135	Screw M6×35	1	M6×35
J36	H6622F8001	Shaft	1	
J37	H6623F8001	Spring	1	
J38	H6635F7101	Cam follower assy	1	
J39	H6642F8001	Nut 11/64 (40)	1	11/64 (40)
J40	HS90131005	Screw M5×5	4	M5×5
J41	H6644F8001	Bolt 11/64 (40)	3	11/64 (40)
J42	H6631F7101	Connecting rod (vertical)	1	
J43	H6646F8001	Hook	1	

J.THREAD TRIMMING MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
J44	H6645F8001	Spring	1	
J45	H6654F8001	Shaft	1	
J46	H6653F8001	Knife driving crank (2)	1	
J47	H6643F8001	Long nut 11/64 (40)	1	11/64 (40)
J48	H6651F8001	Knife driving crank (1)	1	
J49	H6686D8001	Washer 5	1	5
J50	H668EE8001	Spring washer 5	1	5
J51	HA100B2110	Screw 11/64 (40) × 5.5	1	11/64 (40) × 5.5
J52	H6641F8001	Nut	1	

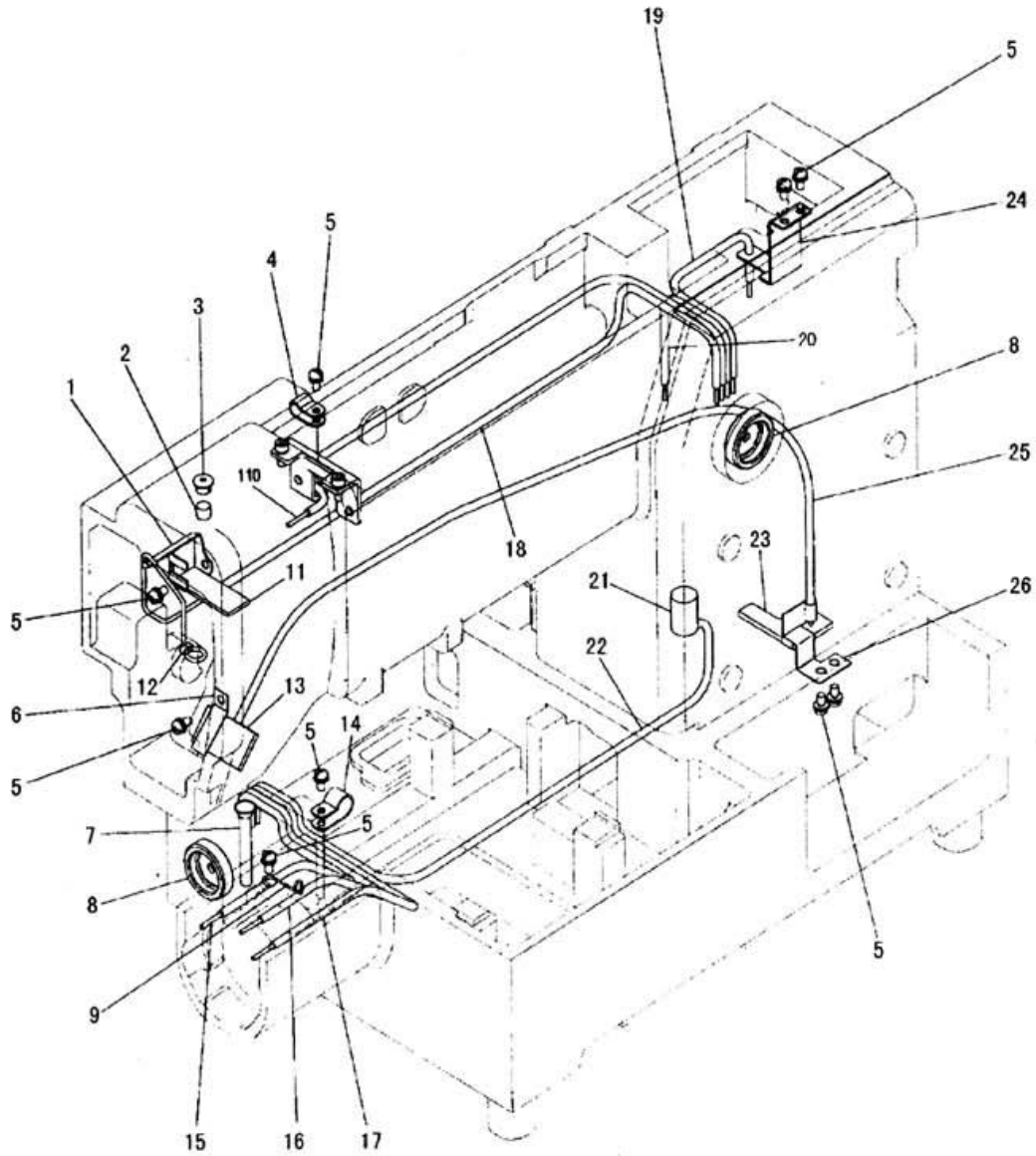
K.WIPER MECHANISM



K.WIPER MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
K01	H6623G8001	Screw M4×10	2	M4×10
K02	H6611G8001	Wiper adapter	1	
K03	H668CE8001	Washer 3	2	3
K04	H668BE8001	Spring washer 3	2	3
K05	HA19038702	Nut M3	2	M3
K06	H6643C8001	Screw 1/8 (44) ×4.5	2	1/8 (44) ×4.5
K07	H6609G8001	Wiper crank	1	
K08	H6607G8001	Screw 9/64 (40)	2	9/64 (40)
K09	H6608G8001	Link	1	
K10	H6613G7101	Solenoid (wiper)	1	
K11	H6622G8001	Screw 9/64 (40) ×6.5	2	9/64 (40) ×6.5
K12	H6621G8001	Finger protector	1	
K13	H6612G8001	Screw 11/64 (40)	1	11/64 (40)
K14	H6606G8001	Wiper	1	
K15	H6625G8001	Nut 9/64 (40)	1	9/64 (40)
K16	H6624G8001	Nut 11/64 (40)	1	11/64 (40)

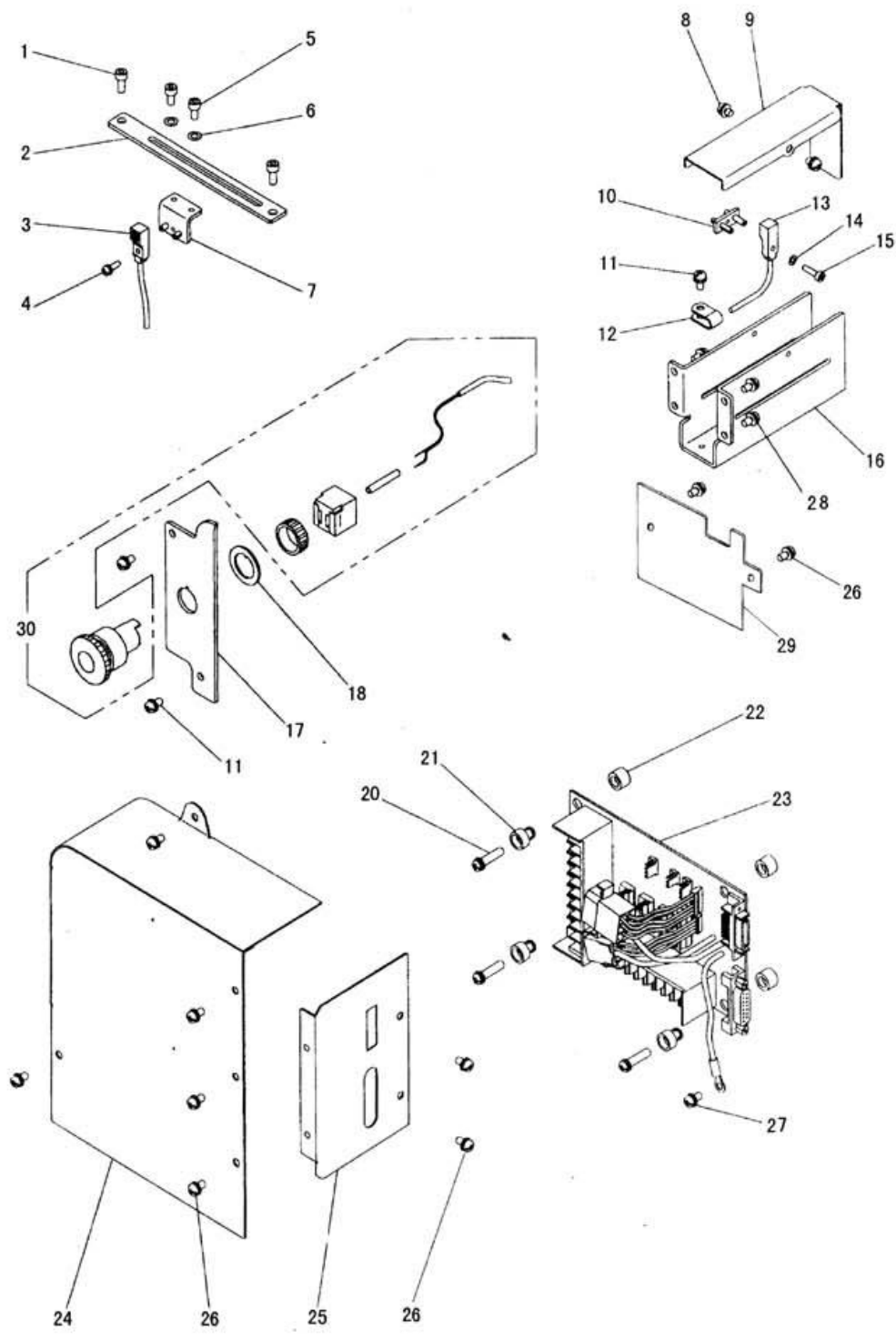
M.OIL LUBRICATION MECHANISM



M.OIL LUBRICATION MECHANISM

Fig. No.	Part No.	Description	Pcs.	Remarks
M01	H6611H8001	Holder	1	
M02	H6646H8001	Felt	1	
M03	H2000M0090	Cap	1	
M04	H6679D8001	Nylon clip AB-3N	1	NAB-3N
M05	HA19039334	Screw M4×8	9	M4×8
M06	H6610H8001	Holder	1	
M07	H6613H8001	Pipe	1	
M08	H6614H8001	Oil gauge	2	
M09	H6612H8001	Holder	1	
M10	H6625H7101	Oil pipe assy	1	
M11	H6634H8001	Felt	1	
M12	H3200G2030	Holder	1	
M13	H6641H8001	Felt	1	
M14	H6646H8001	Nylon clip AB-5N	1	AB-5N
M15	H6619H7101	Oil pipe assy (hook left)	1	
M16	H6622H7101	Oil pipe assy (hook center)	1	
M17	H6616H7101	Oil pipe assy (hook right)	1	
M18	H6631H7101	Oil pipe assy (needl bar)	1	
M19	H6635H7101	Oil pipe assy (connecting rod)	1	
M20	H6628H7101	Oil pipe assy (hook shaft bushing C)	1	
M21	H6608H8001	Felt	1	
M22	H6642H7101	Oil pipe assy (drive shaft bushing R)	1	
M23	H6606H8001	Felt	1	
M24	H6609H8001	Holder	1	
M25	H6638H7101	Oil pipe assy (circulation)	1	
M26	H6605H8001	Holder	1	

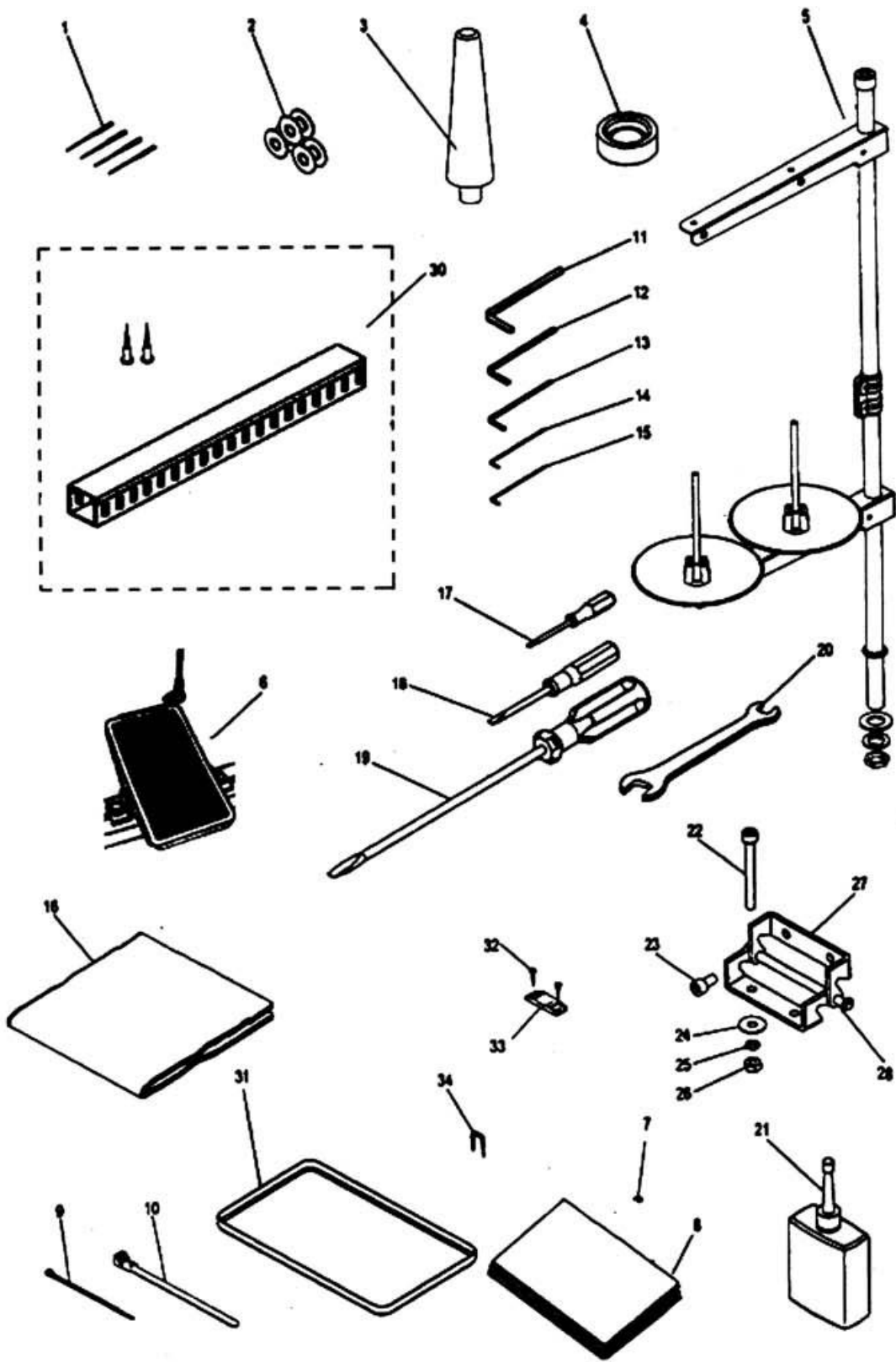
N.ELECTRICAL PARTS



N.ELECTRICAL PARTS

Fig. No.	Part No.	Description	Pcs.	Remarks
N01	HS90321935	Bolt M4×10	2	M4×10
N02	H6656D8001	Detector X mounting plate	1	
N03	H6658D8001	Detector X	1	
N04	HA19039320	Screw M3×10	1	M3×10
N05	HS90321934	Bolt M4×10	2	M4×10
N06	H6684D8001	Washer 4	2	4
N07	H6651D7101	Holder plate assy X	1	
N08	HA19039333	Screw M4×6	2	M4×6
N09	H6675D7101	Detector cover Y	1	
N10	H6676D7101	Holder plate assy	1	
N11	HA19039334	Screw M4×8	3	M4×8
N12	H6679D8001	Nylon clip AB-3N	1	AB-3N
N13	H6670D8001	Detector Y	1	
N14	H668CE8001	Washer 3	1	3
N15	HS90131906	Bolt M3×12	1	M3×12
N16	H6665D8001	Detector bracket Y	1	
N17	H6634I8001	Face cover B	1	
N18	H6642I8001	Lock ring	1	
N20	HA19039340	Screw M4×20	4	M4×20
N21	H6607I8001	Nylon bush	4	
N22	H6608I8001	Nylon bush	4	
N23	H6606I8001	Print circuit board	1	
N24	H6611I8001	Circuit board cover	1	
N25	H6613I7102	Connector panel	1	
N26	HA19039334	Screw M4×8	9	M4×8
N27	HS90201408	Screw M4×8	1	M4×8
N28	HS90329935	Screw M4×10	4	M4×10
N29	H6674D8001	Cover board	1	
N30	H6635I7101	Switch assy	1	

P.ACCESSORIES



P.ACCESSORIES

Fig. No.	Part No.	Description	Pcs.	Remarks
P01	HM010C8001	Needle DP×17#18	4	DXP×17#18
P02	H6685C8001	Bobbin	3	
P03	H6620J8001	Head rest	1	
P04	H6658B8001	Rubber cushion	4	
P05	HA300J2370	Cotton stand assy	1	
P06	HE127I7101	Foot switch	1	
P07	H007013025	E-type retaining ring 2.5	5	
P08	HA704S0654	Owner's manual	1	
P09	H6632J8001	Cord tie	1	
P10	H6622J8001	Cord tie	2	
P11	H6611J8001	Hexagonal wrench 4	1	M4
P12	H3200L0060	Hexagonal wrench 3	1	M3
P13	H3200L0050	Hexagonal wrench 2.5	1	M2.5
P14	H6612J8001	Hexagonal wrench 1.5	1	M1.5
P15	H3200L0070	Hexagonal wrench 1/16"	1	M1/16"
P16	H6619J8001	Polyethylene cover	1	
P17	HA300J2210	Screw drive (small)	1	
P18	HA300J2200	Screw drive (middle)	1	
P19	HA300J2070	Screw drive (large)	1	
P20	HA300J2220	Spanner 10-14	1	M10-14
P21	H200400069	Oiler with oil	1	
P22	H415060550	Bolt M6×55	4	M6×55
P23	H415060120	Bolt M6×12	4	M6×12
P24	H6642J8001	Washer 6.5-18	4	6.5-18
P25	H005008060	Spring washer 6	4	M6
P26	H003001060	Nut M6	4	M6
P27	H6639J8001	Hinge	2	
P28	H007013050	E-type retaining ring 5	2	
P30	HF15410026	Pneumatic assy	1	
P31	H6621J8001	Oil pan	1	
P32	H6628J8001	Wooden screw 3.1×16	4	M3.1×16
P33	H6627J8001	Tie holder	2	
P34	H6618J8001	Staple	4	

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