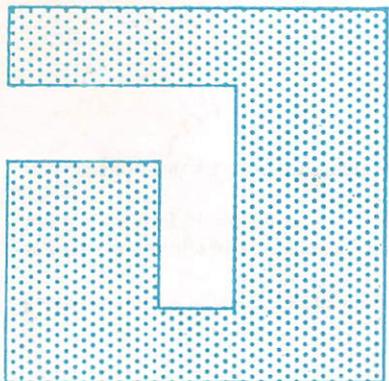


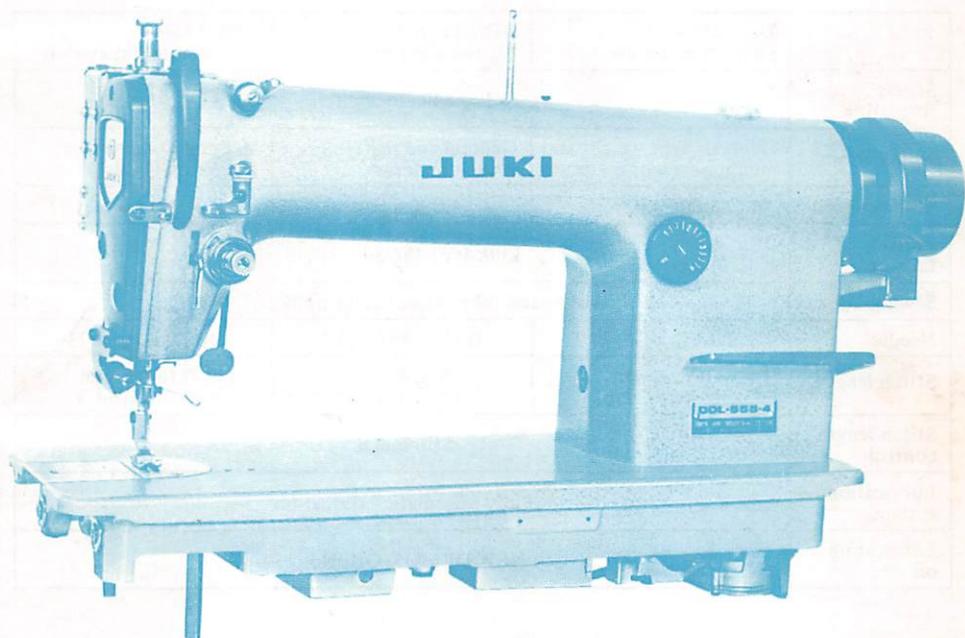
BE5554S0B0A



MODEL DDL-555-4

High Speed, Single Needle, Lockstitch
Industrial Sewing Machine Equipped with
Automatic Thread Trimmer

INSTRUCTION BOOK



TOKYO JUKI INDUSTRIAL CO., LTD.

from the library of: Superior Sewing Machine & Supply LLC

INSTRUCTION BOOK

JUKI DDL-555-4 model is designed to sew white shirt, blouse and similar articles using general shirtings and many other materials.

Especially, the components of this model such as thread take-up, sewing hook, feed mechanism and others are designed for high-speed operations, so that the machine is satisfactorily operated at a high speed without vibration or noise.

Carefully read through this Instruction Book and operate your machine in the optimum sewing condition at all times.

SPECIFICATIONS

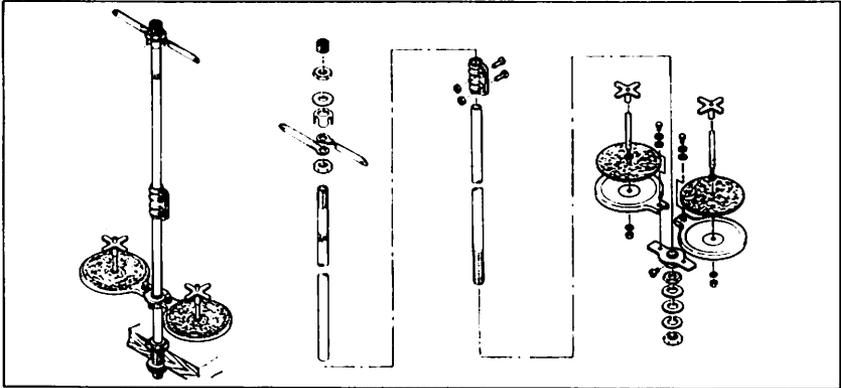
	DDL-555-4 General materials	DDL-555A-4 Light-weight materials	DDL-555H-4 Heavy-weight materials
Stitch formation	1-needle, lockstitch		
Applications	General, light-weight and medium-weight materials	General and light-weight materials	Medium and heavy-weight materials
Sewing speed	5,000 s.p.m.	4,000 s.p.m.	3,500 s.p.m.
Thread take-up	Link-type thread take-up		
Sewing hook	Automatic lubricating rotary hook ($\phi 7.94$)		
Needle	DBx1, #11~#18	DAx1, #9~#11	DBx1, #20~#23
Stitch length	0 to 4 mm (0 to 5/32")	0 to 4 mm (0 to 5/32")	0 to 4.5 mm (0 to 11/64")
Stitch length control	Stitch dial		
Lubrication system	Fully automatic lubrication		
Lubricating oil	NEW DEFRIX OIL No. 1		

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I. INSTALLATION

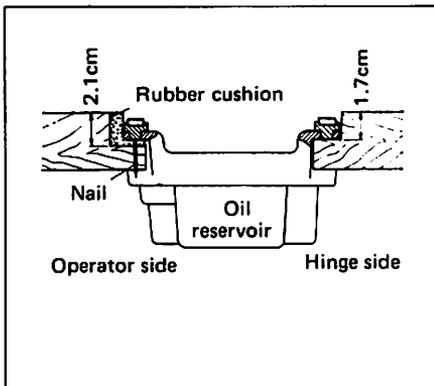
1. Attaching the thread stand to the table



Assemble the thread stand and set it up on the machine table by using the installation holes in the table as illustrated.

Do not tighten the clamping nut too much. When power source is supplied by the overhead wires, pass the power supply cord through the spool rest rod.

2. Installing the oil reservoir



Install the oil reservoir in such a manner that it is supported by the 4 corners of an opening in the table.

1. Nail in the 2 felt pads of 4 mm (5/32") thick to the 2 corners near the operator.
2. Nail in the 2 felt pads of 6 mm (15/64") thick to the remaining 2 corners (hinged side).
3. Place the oil reservoir on the felt pads.
4. Insert the rubber cushions into 4 corners by your finger.
5. Put the round felt pads to 4 rubber cushions.

3. Motor pulley and belt

You must use the M-type V-belt.

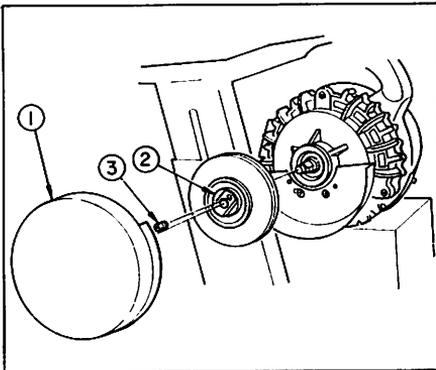
The under mentioned table indicate the maximum sewing speeds related to the motor pulley and the length of belts. The effective diameter of the motor pulley is obtained by deducting 5 mm (13/64") from the outer diameter.

Outer diameter of motor pulley	Motor pulley Part No.	Sewing speed		Belt length	Belt Part No.
		50Hz	60Hz		
125 mm	MTS-P01200A0	5,060 s.p.m.		44"	MTJ-VM004400
115	MTS-P01100A0	4,630		43"	MTJ-VM004300
105	MTS-P01000A0	4,250	5,040 s.p.m.		
100	MTS-P00950A0	4,000	4,780		
95	MTS-P00900A0	3,820	4,540		
90	MTS-P00850A0	3,610	4,320		
85	MTS-P00800A0	3,390	4,000		
80	MTS-P00750A0	3,160	3,790	42"	MTJ-VM004200
75	MTS-P00700A0	2,950	3,520		
70	MTS-P00650A0	2,740	3,260		

(Note) The center hole on the motor pulley is tapered, and the normal pulleys commercially available in the market can not be used for these machines.

If the belt is too long, the connecting rod may not work smoothly.

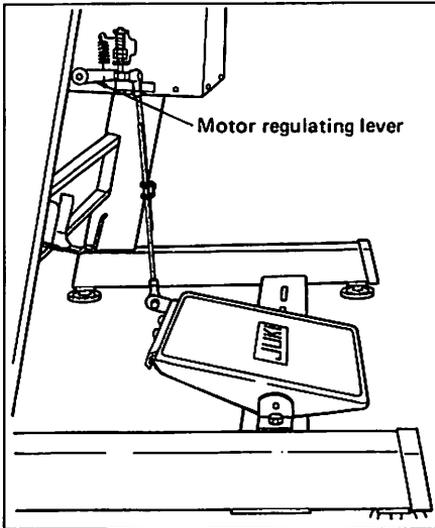
(How to install the pulley)



Remove pulley cover ① and put the pulley into the motor shaft by aligning the key way with the key of the shaft. Tighten pulley nut ② and fix it in position by set screw ③.

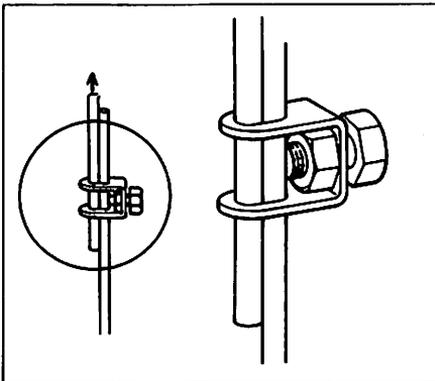
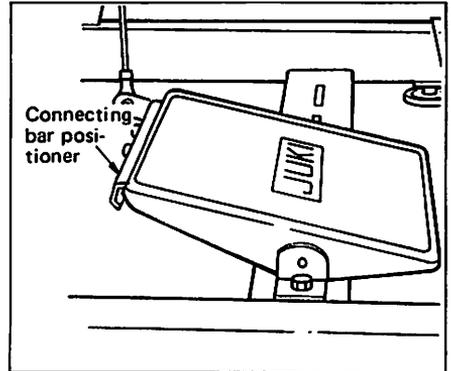
To remove the motor pulley, take out the pulley cover and reverse the above mentioned procedure for installation.

4. Installing and adjusting the pedal



1. How to attach the connecting bar

After the motor regulating lever and the pedal were connected by means of the connecting bar, adjust the vertical position of the connecting bar by sliding the connecting bar positioner.



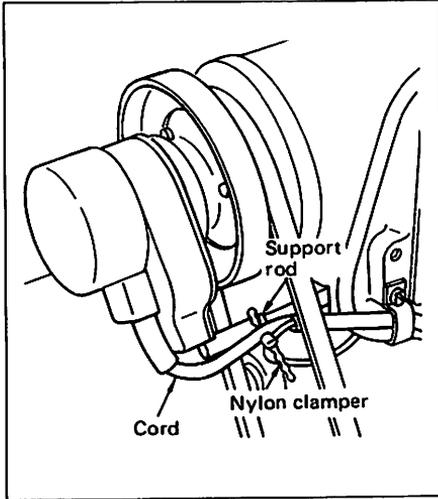
2. How to adjust the pedal angle

You can adjust the pedal angle by changing the effective length of the connecting bar. Loosen the clamp screw and change the effective length of the connecting bar.

5. Installing the synchronizer

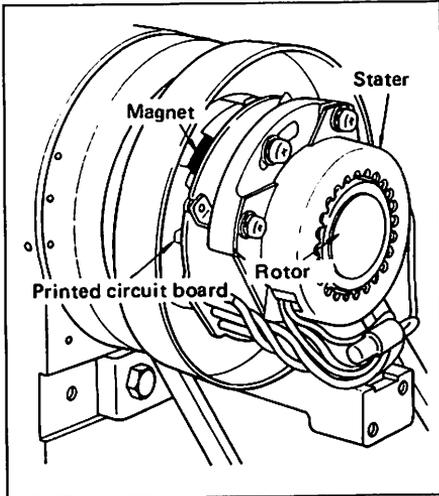
The necessary instruction for installation is indicated on the packing case on both of "MATSUSHITA" and "HITACHI" motors.

(CAUTIONS)



"MATSUSHITA" motors

Screw the support rod into the threaded hole located on the right looking from the hand-wheel side and fix it with a lock nut. Fix the cord onto the support rod by means of the nylon clasper so that it does not contact with the V-belt.



"HITACHI" motors

Be careful not to allow the rotor and the stator to contact with each other.

The clearance between the printed circuit board cover and the rotor magnet is 0.5 to 1.5 mm. Pass the cord through the inside of the synchronizer cover and fix it with the cord clamp so that it does not contact with the V-belt.

6. Connecting the cords

Before starting to connect the cords, make sure that the power source is cutout. Connect each cord with care not to let it touch the motor pulley, V-belt or any other moving parts.

While you are connecting each plug, make sure that the plug is firmly secured in the receptacle by trying to pull it lightly.

(1) is the power supply cord.

(2) is the cord for the magnetic clutch brake which is pre-connected with 4-pole connector (HITACHI) or 3-pole connector (MATSUSHITA).

(3) is the cord for controlling the knee lifter (2-pole connector). Only for AK-2.

(4) is the cord to the selector switch for controlling the count-back stitching (with 3-pole connector for HITACHI, 6-pole connector for MATSUSHITA).

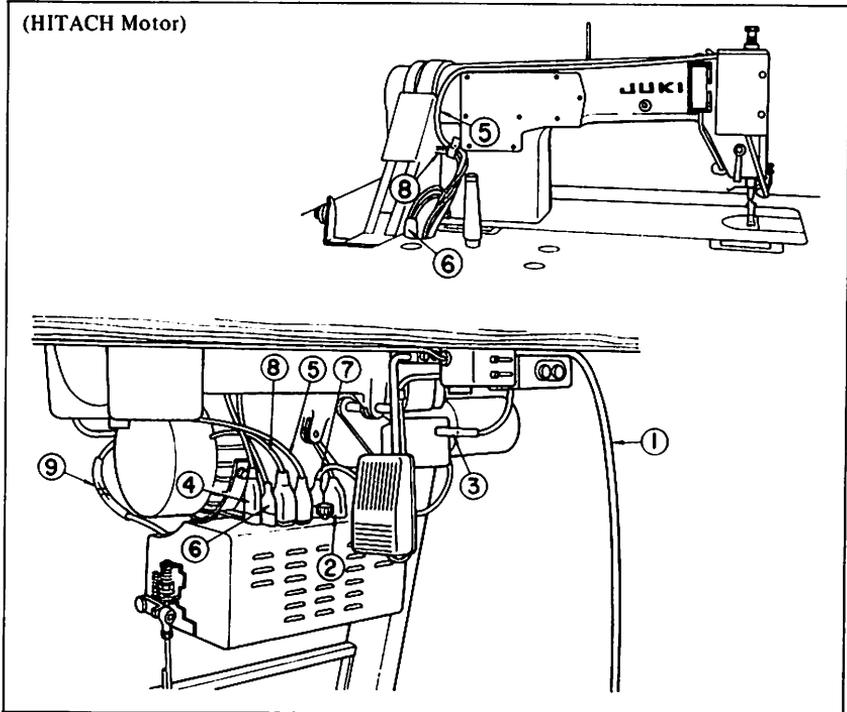
(5) is the cord to the wiper and the control lever for switch-back stitching (with 6-pole connector). Pass the cord through the opposite side of the motor pulley via the hook beneath the table and plug in.

(6) is the cord for driving the thread trimmer solenoid and the automatic reverse feed solenoid. (with 4-pole connector).

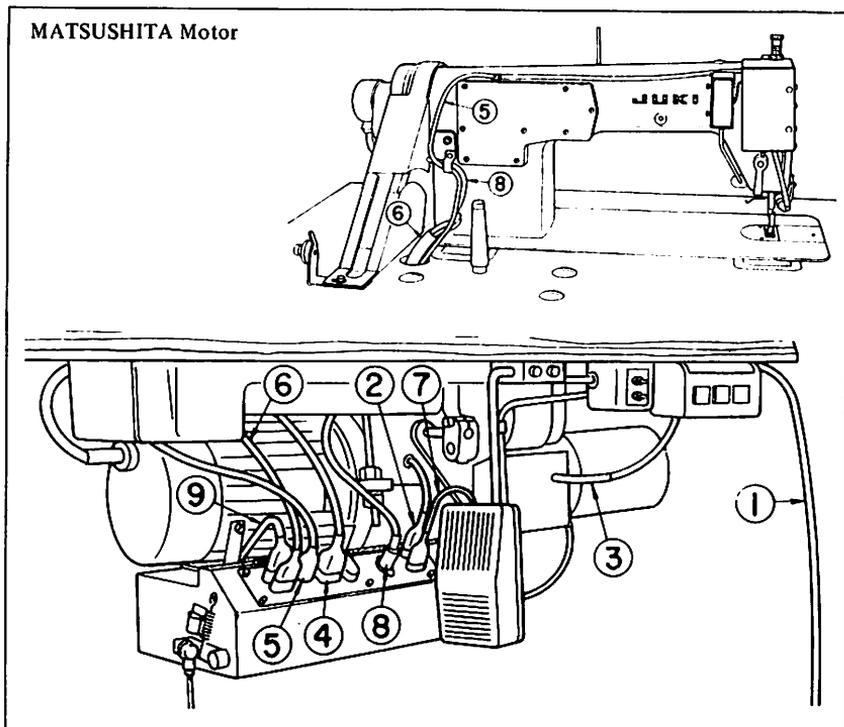
(7) is the cord to drive the solenoid for the automatic lifter (with 4-pole connector). Only for AK-2.

(8) is the cord to the synchronizer. (with 12-pole connector for HITACHI and 8-pole connector for MATSUSHITA).

(9) is the pre-connected cord to the controller. (3-pole connector).



MATSUSHITA Motor



7. Confirming the operating voltage

(HITACHI)

JUKI
NEEDLE POSITIONER
THREE PHASE MOTOR

OUTPUT	400W	TYPE	SLIP
VOLTS	200	MOTOR	C
HP	0.54	LEAD	5V 70V
LEAD	5V 70V	LEAD	5V 70V
SP	2880	SP	2880

Hitachi Ltd. Tokyo Japan

(MATSUSHITA)

PANA STOP

TYPE	ENAM	RATING	CONT.
FORM	TSAI	ROTOR	C
LAMP 6V20W SER. NO.			

400W 2 POLE 50 Hz 200 1.7 2880 H
 71-1034 60 200 1.6 3450 G

MATSUSHITA ELECTRIC INDUSTRIAL CO. LTD.

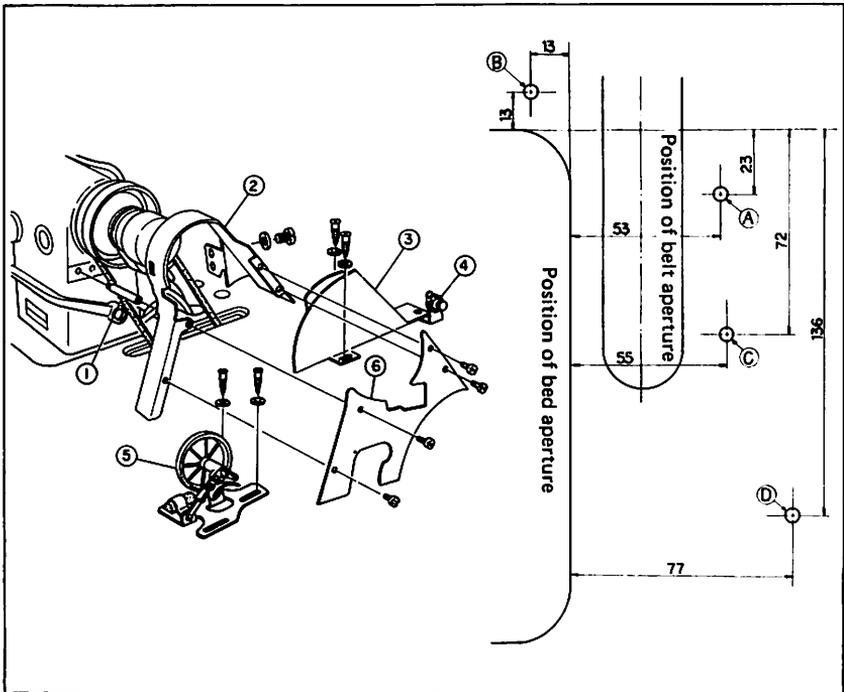
JUKI

Check your operating voltage with the rated voltage, Hz., and phase specified by the machine plate of each motor.

If the motor is operated with a different voltage, not only the motor itself but also the control circuits may be broken, please note.

8. Mounting the belt cover and bobbin winder on the table

Mount the belt cover and bobbin winder on the machine table according to the drawing and procedure detailed below :



(Procedure)

1. Make guide holes (A) , (B) , (C) and (D) for wood screws in the table top.
2. Insert belt cover frame stud (1) into the tapped hole in the machine arm.
3. Attach belt cover frame (A) (2) to the arm. One of the tapped holes is jointly used for attaching a cord holder.
4. Attach bobbin winder thread tension post assembly (4) to belt cover frame (B) (3) and insert them into belt cover frame (A) (2) .
5. Put bobbin winder (5) into belt cover frame (A).
6. Attach belt cover panel (6) to belt cover frame (A).
7. Fix belt cover frame (B) to the table top by screwing 2 wood screws into guide holes (A) and (B) . Similarly, fix the bobbin winder by using guide holes (C) and (D) .

II. HOW TO OPERATE THE MACHINE

1. General instruction

After the machine has been set up, bring down the needle by rotating the handwheel with your hand, switch on the machine on trial and check that the motor rotates in the correct direction by watching the rotation of the handwheel. The handwheel must rotate counterclockwise watching from the open side of the handwheel.

If you fail to judge it, you can repeat to switch on and off the machine until the direction is found.

- Clean up the installed machine.
- Before starting to operate the machine, read through the separate INSTRUCTION BOOK.
- **Do not drive the machine before the oil reservoir is filled with the lubricating oil.**
- Do not replace the motor pulley with a larger one within first 1 month.
You may operate the machine at a higher speed depending on the necessity of sewing works and operator's ability after the first 1 month has passed.
- **Keep away from the needle dropping place when you switch the machine on.**
- Do not fail to switch off the machine before you tilt the machine head backwards for lubrication or cleaning or removing the V-belt.
(If you mistakenly tread on the pedal, the motor pulley will be stopped immediately by means of the built-in safety device in the case of "HITACHI" motor assembly.)
- **When you move the machine to other places, do not hold it with the cover located on the rear of the handwheel.**
- Even if you tread on the pedal backwards (heel-down) immediately after the machine is switched on or the thread is trimmed, the needle would not come down or the thread trimmer would not work. Such thread trimming motion is performed only after the pedal has been trod once forwards (toe-down).

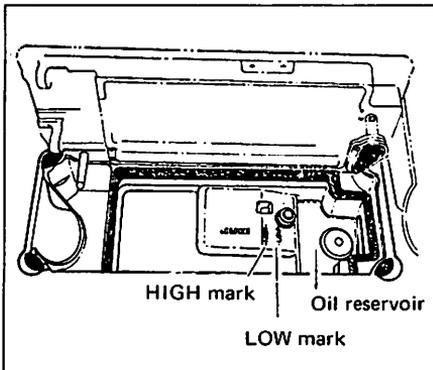


As long as the oil reservoir is properly filled up with the lubricating oil, you will see the oil splashing on the internal surface of the oil sight window while the machine is running. Since the oil sight window is used only to check if the lubricating oil is flowing or not, you do not have to worry about the amount of oil appearing in it.

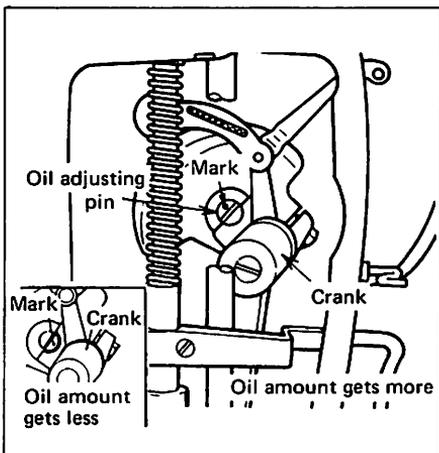
(Notes)

1. As soon as lubricating oil has become dirty, renew the oil.
It can be drained by removing the oil drain cap screw.
2. In order to thoroughly lubricate the machine, provide it with an idle run for about 10 minutes at a sewing speed of 3,000 to 3,500 s.p.m. before using a newly installed machine or a machine which has not been operated for a long period of time.

2. Lubrication and amount of oil



Before driving the machine, fill the oil reservoir with JUKI New Defrix Oil No. 1 up to "HIGH" level. Take care not to allow the oil level to come down below the "LOW" mark during operation.



Adjustment of oil amount fed to the face plate components-

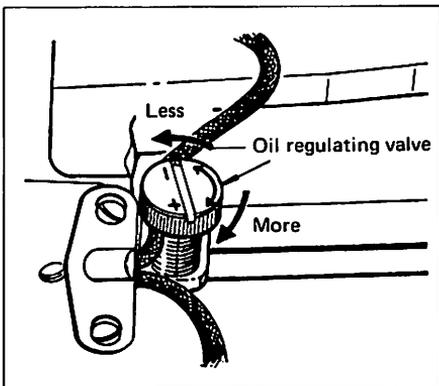
When adjusting the amount of lubricating oil flowing into the face plate components such as the thread take-up and needle bar crank, remove the face plate and the arm oil shield and rotate the oil adjusting pin which is located on the top end of the main shaft.

To minimize the oil flow, bring the dot mark on the adjusting pin close to the crank.

To maximize it, bring the dot mark to the far side of the crank.

(Note)

After this adjustment, let the machine run and confirm the result of adjustment.



Adjustment of oil amount fed to the sewing hook:

Adjust it by means of the oil adjusting screw which is located on the hook driving shaft from bushing. Amount of flowing oil is increased by turning clockwise and decreased by turning counterclockwise.

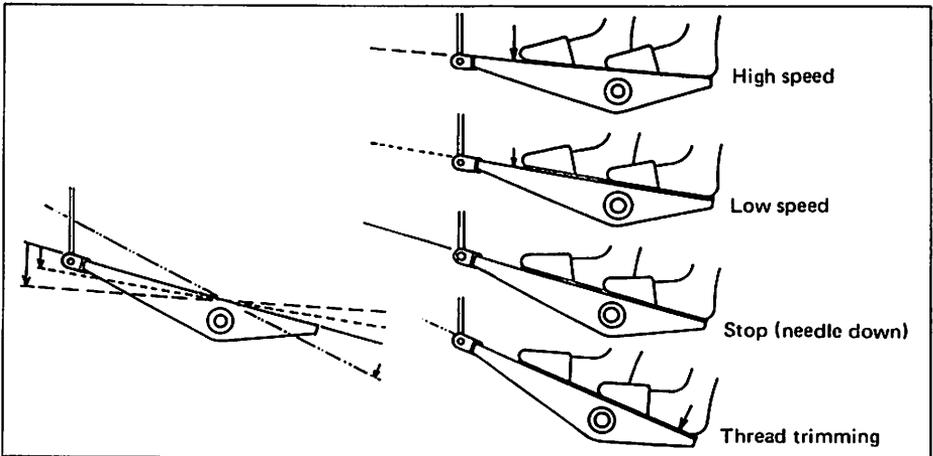
3. Checking the pedal action

- Firstly, check your machine without passing the threads.
- Switch on the machine, and the needle will be held at its highest position without fail.
- Even the needle staying at a lower position will be brought up and held at the highest position by switching on the machine.

4. How to operate the pedal

As the following illustration shows, the pedal of this model is operated in 4 stages.

- ① Place your feet gently on the pedal at the stop position.
(The needle is held at the lowest position).
- ② Tread on the pedal lightly forwards (toe-down), and the machine starts to rotate at a low speed.
- ③ Tread on the pedal further forwards (toe-down), and the machine will increase its speed gradually and attain the maximum speed when it has been trod down fully. However, when the switch for the counter-back stitching is turned on, the machine will attain its maximum sewing speed only after the count-back stitch has been formed, even though you tread on the pedal fully.



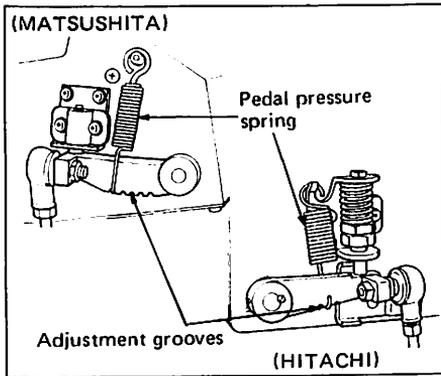
- You can obtain the normal performance of thread trimming by treading on the pedal backwards (heel-down) directly from the high or low speed position.
- You can tread back the pedal to the neutral position immediately after the machine has started to perform the thread trimming action.
The thread trimming action is automatically completed and you do not need to keep the pedal at the thread trimming position any longer.
- When the machine stops, the needle will be held at the lower position.
- When you want to bring up the needle, tread on the pedal fully backwards (heel-down) once. Then, the machine will perform a thread trimming action and will bring up the needle and hold at its highest position.

(Note)

In some cases, the machine with "MATSUSHITA" motor, does not start to run immediately after a thread trimming action was made even though the pedal is trod forwards (toe-down). This is simply because the machine is locked by the safety device built in the motor assembly. In such a case, tread on the pedal back to the neutral position once and tread on it again forward to drive the machine.

In the case of the machine with "HITACHI" motor, such safety device is automatically released after thread trimming action has been completed.

5. Adjusting the pedal pressure and stroke



Adjustment of the forward pressure

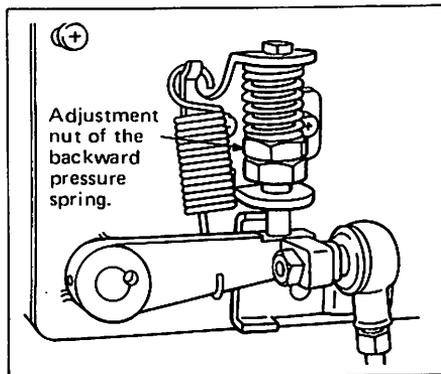
Adjust the forward pressure by changing the position of the spring.

“HITACHI” motor:

The pressure is reduced by moving the spring to the left and is increased to the right.

“MATSUSHITA” motor:

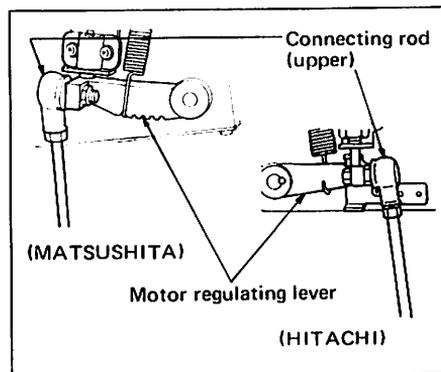
The pressure is reduced by moving the spring to the right and is increased to the left.



Adjustment of the backward pressure

“HITACHI” motor:

The backward pressure can be adjusted by means of the adjustment nut of the backward pressure spring. The pressure is increased by tightening the spring and reduced by loosening.



Adjustment of the pedal stroke

The pedal stroke can be adjusted by changing the connection of the upper connecting rod with the motor regulating lever.

“HITACHI” motor:

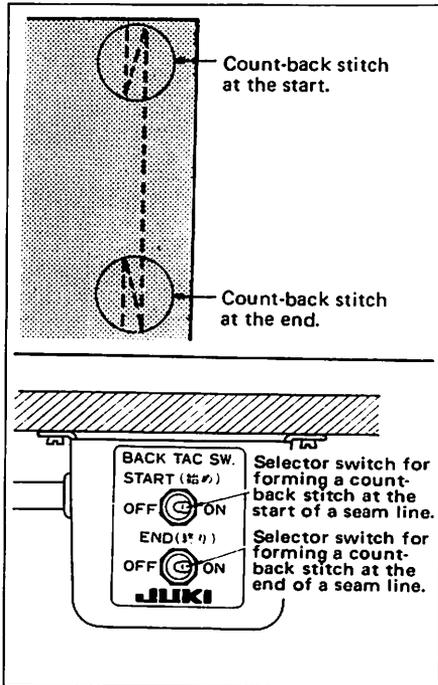
The stroke is reduced by connecting the rod with the left hand side of the lever and increased by the right hand side.

“MATSUSHITA” motor:

The stroke is reduced by connecting the rod with the right hand side of the lever and is increased by the left hand side.

6. Automatic count-back stitching

You can form the count-back stitches at the start and/or the end of a seam line automatically without operation of the feed control lever or switch-back lever.

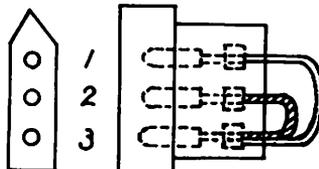


- ① You can preset the machine to form the count-back stitches at the start and/or the end of the seam line by means of the selector switches.
- ② If the number of count-back stitch is not enough for your sewing purpose, turn off the selector switch and produce the necessary length of reverse stitches manually by making us of the reverse feed control lever or the switch-back lever.
- ③ When the selector switch for "Start" is turned on, you can let the machine to automatically trim off the thread immediately by treading on the pedal backwards before or after forming the count-back stitch at the start of a seam line. Even though you tread on the pedal for thread trimming while the count-back stitch is being formed, the thread trimming action will not be performed prior to the formation of the said count-back stitch.
- ④ When the selector switch for "End" is turned on, the thread trimming action will be performed after the count-back stitch has been formed at the end of a seam line. If you tread on the pedal for thread trimming while the machine is forming a count-back stitch at the end of a seam line, the machine will trim off the thread after completing the said count-back stitch.

(Note)

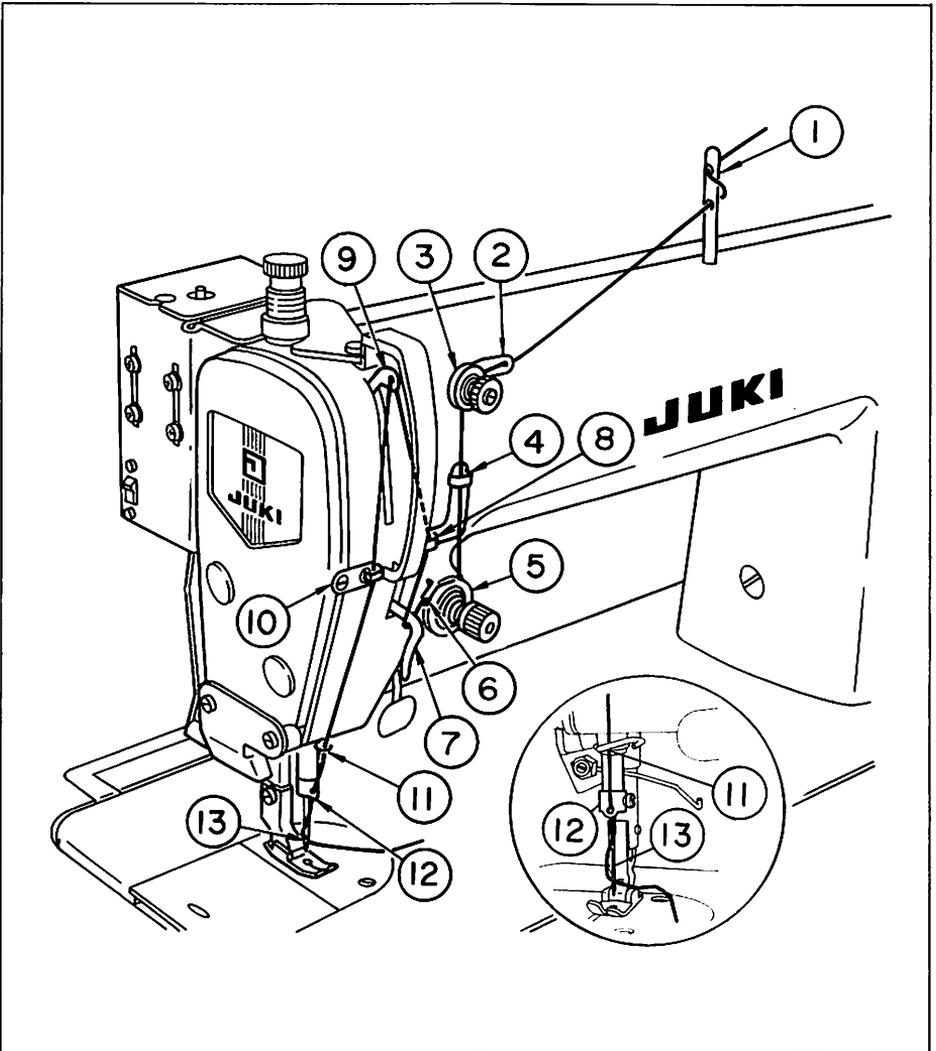
When the selector switch for the automatic count-back stitching is not used (with a HITACHI motor): Disconnect the switch from the motor control box.

When it is used, insert a connector which is wired as illustrated below into the position of 3-p plug (4 , Fig. paragraph 5) on the motor control box. (Option. Part No. D6010555DA0)

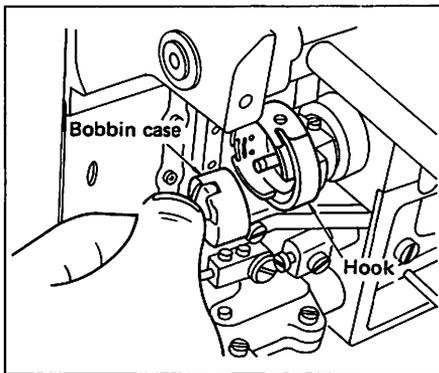


7. Passing the needle thread

- If the machine stops leaving the needle at a lower position, tread on the pedal backwards for performing an idle thread trimming before passing the needle thread. Then, the needle will go up and stay at the highest position.
- Pass the needle thread in the order from ① to ⑬ as shown in the illustration.



8. Bobbin thread

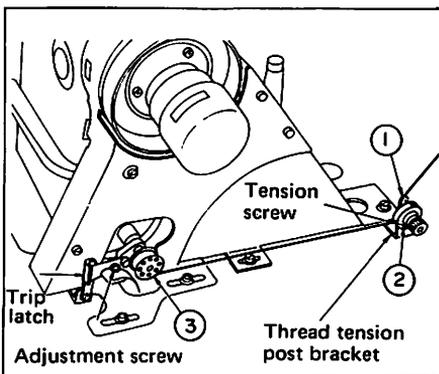


Inserting and removing the bobbin case:

1. Bring up the needle to its highest position by manually rotating the handwheel.
2. Tilt the machine head back and allow it to rest on the rubber pads attached to the table.
3. Lift up the bobbin case latch and take out the bobbin case.
Bobbin will not fall down as long as the latch is lifted.
4. To insert the bobbin case, fully insert it into the hook shaft so that the nose of the bobbin case rests in the hook groove and close the latch.

Winding the bobbin:

1. Thread the bobbin winder in the order as illustrated and wind the thread end several times round the bobbin.
2. Push down the bobbin trip latch to let the bobbin winder pulley touch the belt.
3. Adjust the winding adjustment screw so that the thread is wound round the bobbin for about 80 per cent of its capacity.
4. When the bobbin is wound unevenly, correct it by moving the thread tension post bracket.
Tighten the screw for increasing the thread length to be wound and loosen for reduce.
5. As soon as the bobbin is filled, the bobbin winder will automatically stop.



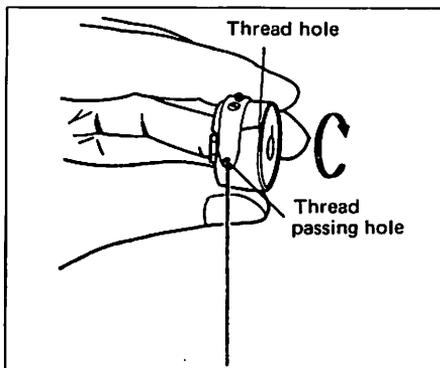
(Note)

In order not to wound the bobbin too tight with a synthetic thread, adjust the tension screw so that the thread is lightly drawn from the thread tension post socket.

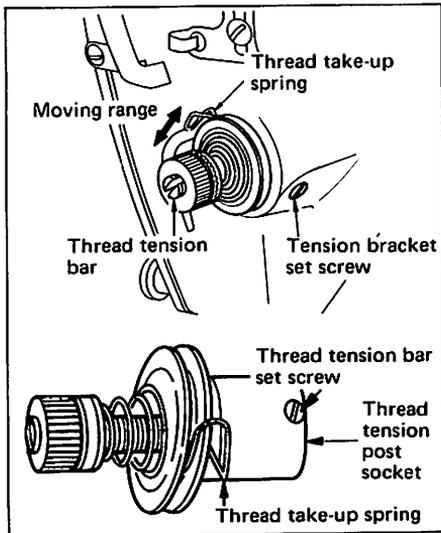
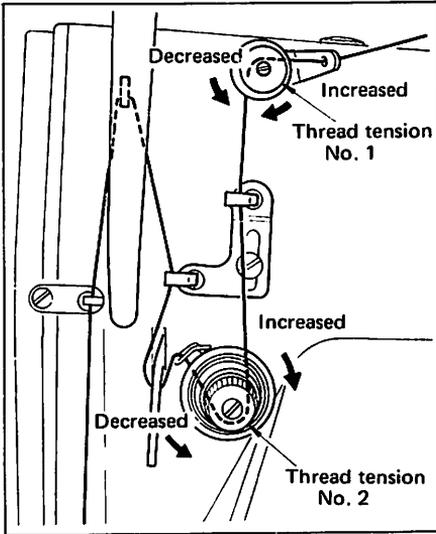
Inserting the bobbin into the bobbin case:

1. Take the bobbin in your hand so that the thread is directed clockwise and place it into the bobbin case.
2. Take the thread in your fingers and pull up toward the slot in the bobbin case.
3. Pull the thread, and it will pass through the thread tension spring.

*Make sure that the bobbin spins in the bobbin case in the direction indicated with the arrow when the thread is drawn.



9. Adjusting the thread tension



(Note)

When using a thin cotton or synthetic thread, take care not to provide the take-up spring with an excessive tension or stroke.

Otherwise, stitch may be skipped at the end of sewing and the threads will not be trimmed.

Needle thread tension:

Needle thread tension is adjusted by the thread tension nuts No. 1 and No. 2 thread tension is increased by a clockwise turn and reduced by a counter-clockwise turn.

o Thread tension No. 1.

The length of needle thread remaining in the needle after thread trimming becomes short when the thread tension nut No. 1 is tightened, and vice versa. Tighten the tension nut when a thin thread like synthetic thread is used and loosen it when a thick thread is used.

o Thread tension No. 2

Adjust the thread tension nut No. 2 so that the needle and bobbin threads are inter-looped in the middle of the material. Do not excessively reduce the thread tension when sewing with a synthetic thread, or the thread may be broken at the start of sewing.

Thread take-up spring

Adjust the thread take-up spring for the following standard:

Thread	Thread No.	Stroke	Tension
Cotton	#40 or less	7 to 10 mm (9/32" to 25/64")	20 to 35g
Cotton	#50 or more	6 to 9 mm (15/64" to 23/64")	15 to 30g
Synthetic	6 to 9 mm (15/64" to 23/64")	7 to 20g

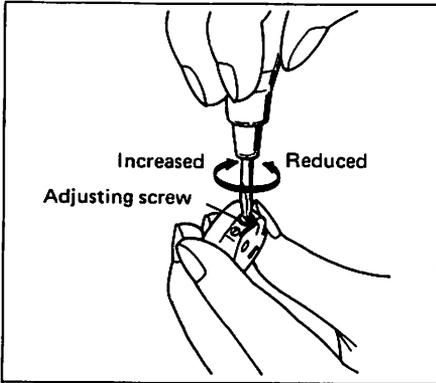
o To change the stroke of the thread take-up spring, loosen the screw of the thread tension post socket and turn the thread tension post in either direction.

o To change the tension of the thread take-up spring, loosen the screw of the thread tension post socket, remove the thread tension post and adjust the tension after loosening the set screw.

Tension is increased by turning the thread tension post in the clockwise direction, and vice versa.

How to adjust the thread length remaining in the needle after thread trimming:

- In order to prevent the needle thread from slipping off and produce neat stitch on the bottom face of the material at the start of sewing, a proper length of needle thread must be left in the needle eye after thread trimming.
- The thread length is adjusted by the thread tension No. 1.
- It is possible to provide the thread trimmer with different timing of action to trim a synthetic thread from that of cotton thread. Consult with our distributors or agents in your area for this modification.



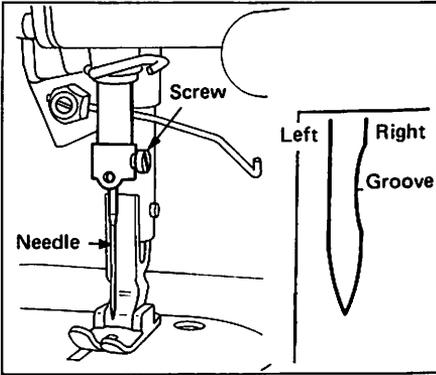
Bobbin thread tension:

Bobbin thread tension can be adjusted by tightening or loosening the tension screw of the bobbin case. Turn the screw clockwise for increasing and counterclockwise for reducing the bobbin thread tension.

10. Attaching the needle

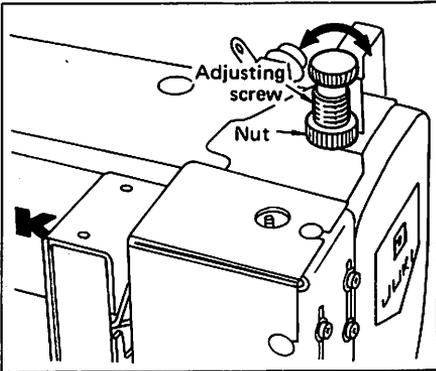
Use a proper size of DBx1 or DAx1 needle according to the thickness and type of thread and material as listed below;

Needle	Thread			Material	
	Cotton	Synthetic			
DB x 1	#9	#80	#80	Fine	Georgette, nylon, tetron broadcloth
	11	80~60	80~60	Light-weight	Broadcloth, light-weight knits
	14	60~50	60~50	General cloth	Cotton gabardine, drill
	16	50~30	50~30	Medium-weight	Coatings
	18	30~20	30~20	Heavy-weight	Denim
	21	30~ 8		Extra-heavy	Cantton, canvas
	22.23	8		Extra-heavy	Cantton, canvas
DA x 1	8~9	80	80	Fine	Georgette, nylon, tetron broadcloth
	11	60	60	Light-weight	Broadcloth, fine knits
	14	50	50	General cloth	Cotton gabardine, drill



Let the needle bar go up to its highest position by the handwheel. Loosen the needle clamp screw, hold a needle facing its recess to the right, insert the needle into the needle clamp as far as it will go and tighten the needle clamp screw.

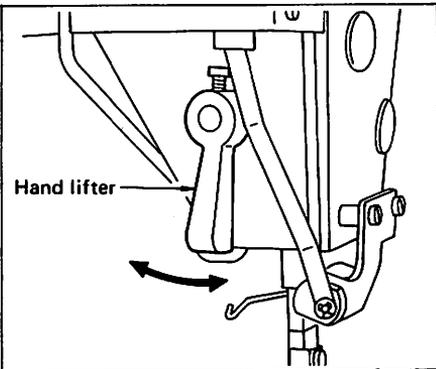
11. Presser foot



Adjusting the presser foot pressure:

Pressure applied by the presser foot to the works is increased by rotating the presser spring regulator in the clockwise direction and vice versa. It is advisable to set it to about 5 Kg when general cloth is sewn.

Tighten the lock nut after adjusting the presser spring regulator.

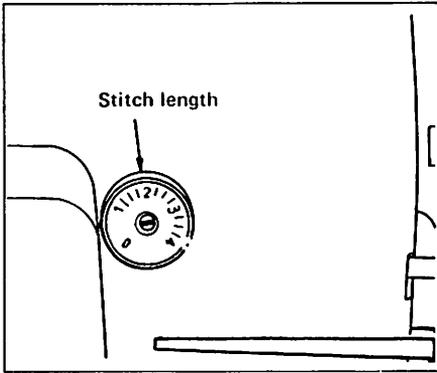


Presser lifter:

Turn the hand lifting lever located in the rear of the machine head either to left or right, and the presser foot will go up for about 5 mm ($13/64$ ") from the throat plate surface.

Push down hand lifter, and the presser foot will come down to press the work. By the knee lifter, the presser foot will go up for about 10 mm ($25/64$ ") from the throat plate surface.

12. Stitch length adjustment

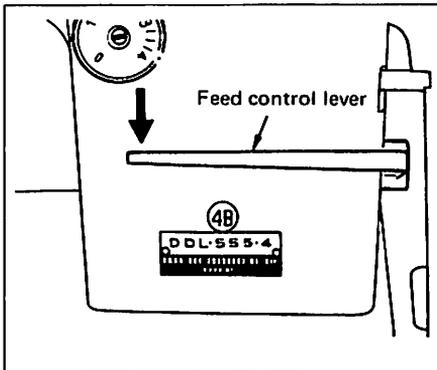


Stitch length is adjusted by the stitch dial located above the reverse feed control lever.

Set a desired stitch length (mm) of the dial to the pointer pin fixed to the machine arm.

*The maximum stitch length is 4 mm (5/32").

13. Reverse stitching by using the reverse feed control lever

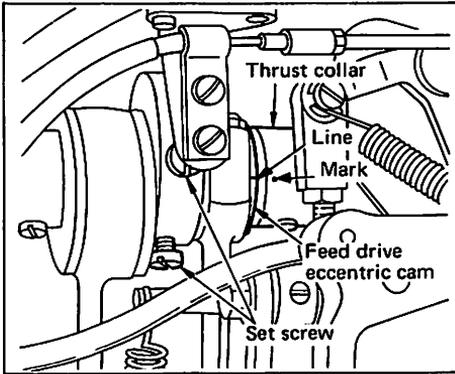


Push down the reverse feed control lever as long as a desired reverse stitch is completed.

Release your hand from the lever, and it will immediately go up to feed the material in the forward direction.

III. ADJUSTMENT

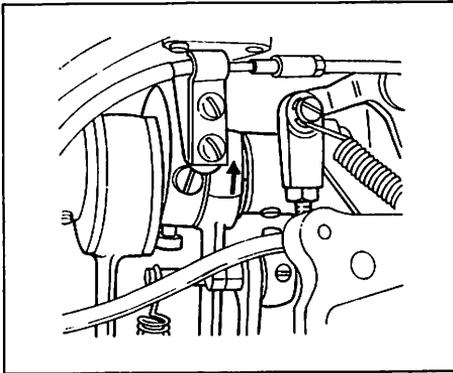
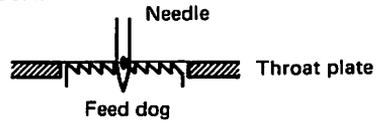
1. Feed mechanism



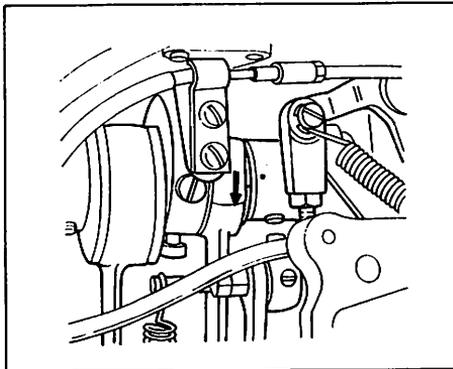
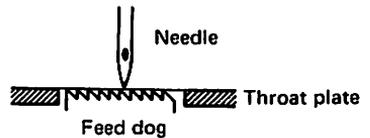
Adjusting the feed timing: (excepting DDL-555H-4):

To obtain the standard feed timing, align the engraved line on the feed drive eccentric cam with the dot mark on the thrust collar. By this adjustment, puckering stitch will be eliminated and stitches will have an ideal thread tension.

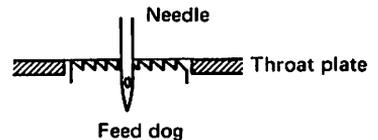
Loosen 2 setscrews on the feed drive eccentric cam properly position the cam and firmly tighten 2 setscrews.

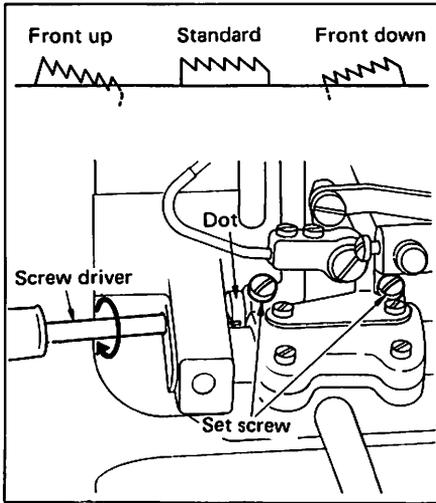


If it is preferable to provide the feed mechanism with an earlier timing than the standard timing in order to prevent the work from slipping during stitching, move the feed drive eccentric cam in the direction shown by the arrow.



If it is necessary to delay the timing of feed mechanism in order to improve the thread tension in stitches, move the feed drive eccentric cam in the direction shown by the arrow. But, do not move it too much, otherwise it may become a cause of needle breakage.





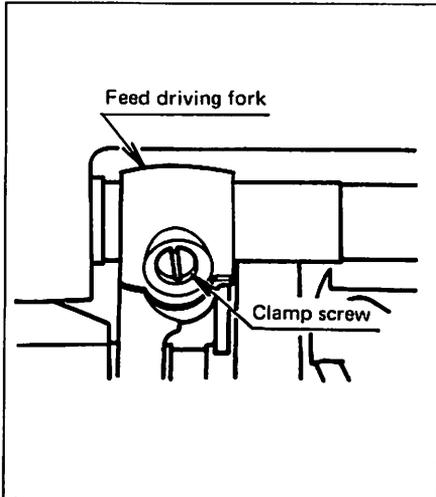
Adjusting the feed dog inclination (excepting DDL-555H-4):

The feed dog of each machine has been adjusted to horizontal position (standard position). It can be changed, if necessary, according to the varied sewing conditions.

- Descent (front-up) position:
Puckering is prevented and chain-off thread is easily coming out.
- Ascent (front-down) position:
Cloth slipping and breakage of knitted fabric texture are prevented.
- The standard inclination of the feed dog is that the engraved dot on the feed bar shaft is aligned with the axes of 2 setscrews. Loosen 2 setscrews of the feed bar shaft, insert a screw driver blade into the slot in the feed bar shaft and turn 90° in either direction. The front top of the feed dog will be raised to the highest position when the shaft is turned 90° in the direction shown by an arrow, and vice versa.

(Note)

The height of the feed dog must be corrected every time after changing its inclination.

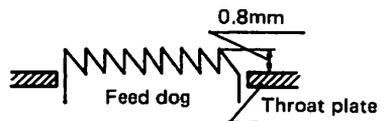


Adjusting the feed dog height:

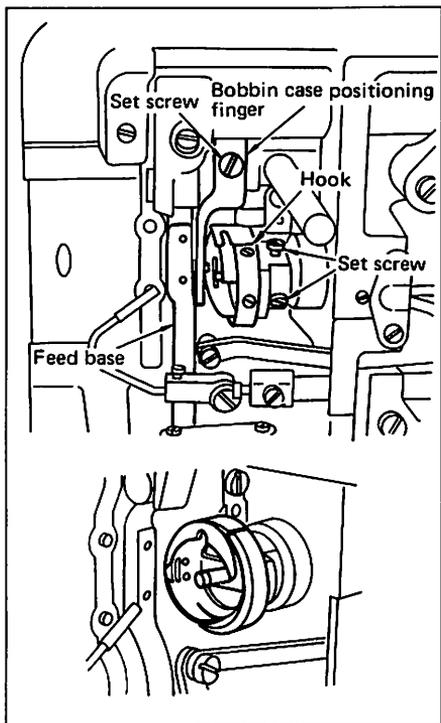
The standard height of the feed dog is to jut out its teeth 0.8 mm (1/32") above the throat plate surface when sewing general materials. It is advisable to change the feed dog height to about 0.6 mm (1/64") for sewing light-weight materials and about 1.0 mm (3/64") for heavy-weight materials.

If the feed dog teeth juts out too much above the throat plate surface, puckering seam may be occurred.

Loosen the setscrew of the feed rocker shaft crank, set the feed bar for a proper position and securely tighten the setscrew.



2. Replacing the sewing hook

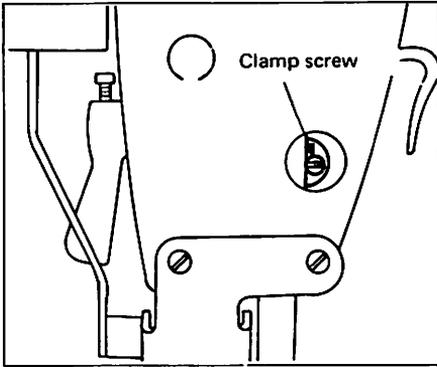


When the sewing hook has to be replaced with new one due to some reasons, remove it in the following procedure;

1. Manually turn the handwheel until the needle reaches its highest position.
2. Remove the bobbin case and the needle.
3. Loosen the setscrew of the bobbin case holder positioning finger and remove the positioning finger.
4. Loosen 2 sewing hook screws.
5. Manually rotate the handwheel until the feed bar reaches its highest position.
6. Rotate the sewing hook by your finger and hold it in the position as illustrated.
7. Pull out the sewing hook to the left.

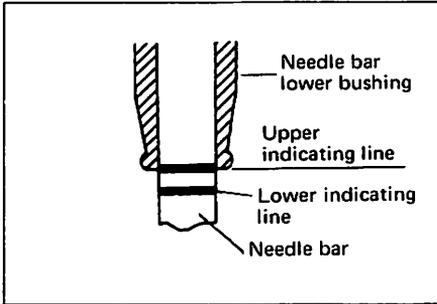
*When installing the sewing hook, reverse the above procedure.

3. Sewing hook position related to the needle



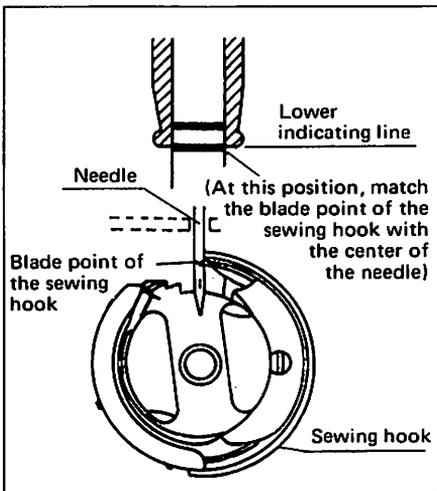
Adjust the sewing hook position related to the needle in the following way :

1. Bring up the needle to its lowest position by the handwheel.
2. Loosen the screw of the needle bar connection.



(Needle bar height)

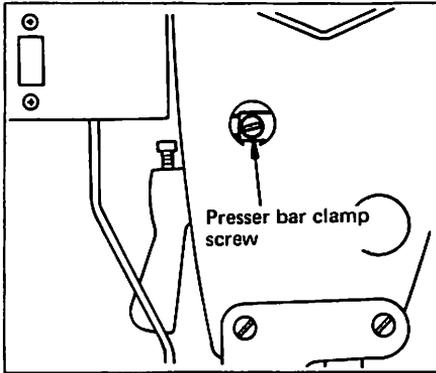
3. Align the upper engraved line of the needle bar with the bottom end of the needle bar lower bushing.
4. Tighten the needle bar connection screw.



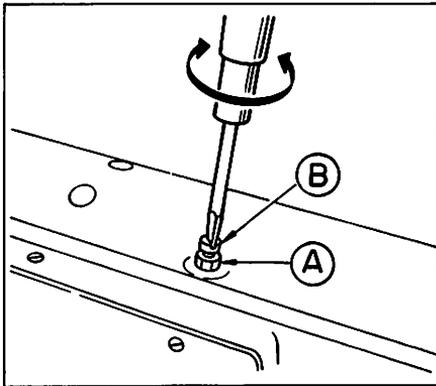
(Sewing hook position)

5. Loosen 2 setscrews to release the sewing hook.
6. Hold by hand the sewing hook in the thread taking-up position.
7. Rotate the handwheel until the lower engraved line of the needle bar reaches the bottom end of the needle bar lower bushing.
8. By keeping the needle bar in the above mention-position, align the pointed end of the sewing hook with the needle axes.
9. Do not keep the pointed end of the sewing hook away more than 0.05 mm from the needle.
10. Securely tighten the sewing hook screws.

4. Height of the presser bar



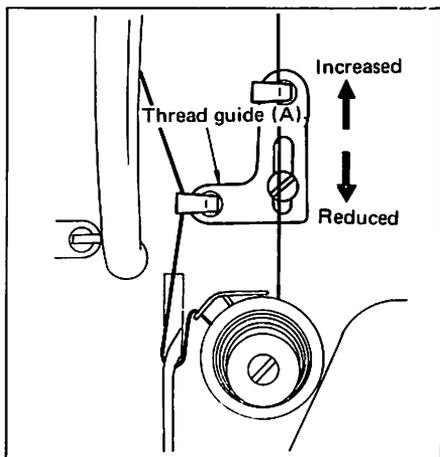
When correcting the height or angle of the presser bar after replacing the presser foot or some other reasons, remove the rubber plug from the face plate and loosen the screw of the presser bar guide bracket by inserting a screw driver through the opening in the face plate. Securely tighten the screw after adjusting the presser bar height.



How to use the pressure reducer:

It is possible to slightly reduce the pressure applied by the presser foot when the pressure reducer is used. This system is quite useful when a floating presser foot is used or a work has to be turned round at an end of a seam to continue to stitch in a different direction. Loosen the lock nut **A** and properly tighten the adjusting screw **B**, and the presser foot will be raised up from the throat plate surface, so that the material in the machine can be easily turned round the needle.

5. Thread take-up action

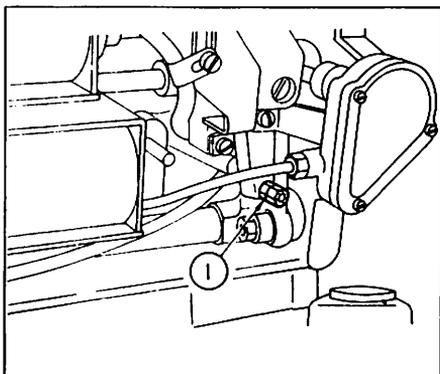


It is recommendable to change the thread take-up action according to the types of material and stitch length, in order to obtain well-tightened stitches.

- When sewing heavy-weight materials, increase the thread length taken by the thread take-up lever by lowering the thread guide (A).
- When sewing light-weight materials, reduce the thread length taken by the thread take-up lever by positioning the thread guide (A) in the middle or higher place.

This adjustment can be made after loosening the setscrew of the thread guide (A).

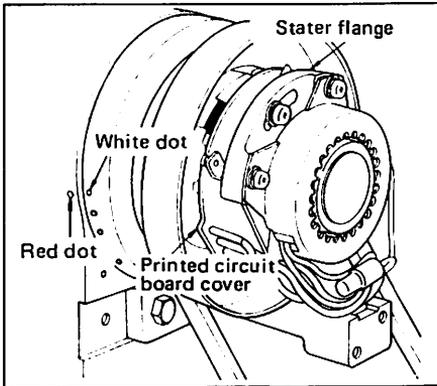
6. Returning pressure of the reverse feed control lever



In order to allow the reverse feed control lever to immediately return to its standby position after being released in any sewing conditions, the lever is forced back by a strong spring. If it is necessary to reduce the returning pressure to use the machine at a low sewing speed or with a fine stitch, slightly loosen the adjusting nut ①.

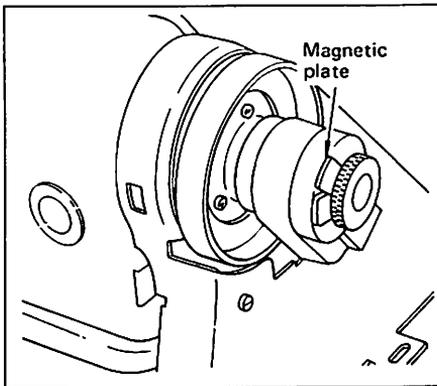
7. Adjusting the needle stop position after thread trimming

You can adjust the position at which the needle stops after a thread trimming has been completed. The standard needle stop position is shown by the coincidence of the white dot marked on the hand wheel with the red dot on the machine arm. This adjustment can be made by changing the installation angle of the sensing element of the synchronizer component. Refer to the separate Instruction Book prepared for the motor assembly for the details of adjustment.



"HITACHI" motor:

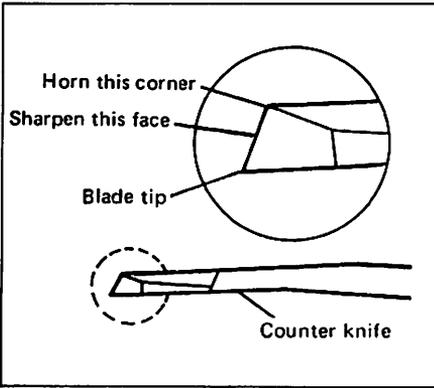
Remove the cover from the synchronizer component and adjust the installation angle of the printed circuit board within the adjustable range of the oval holes on the stator flange.



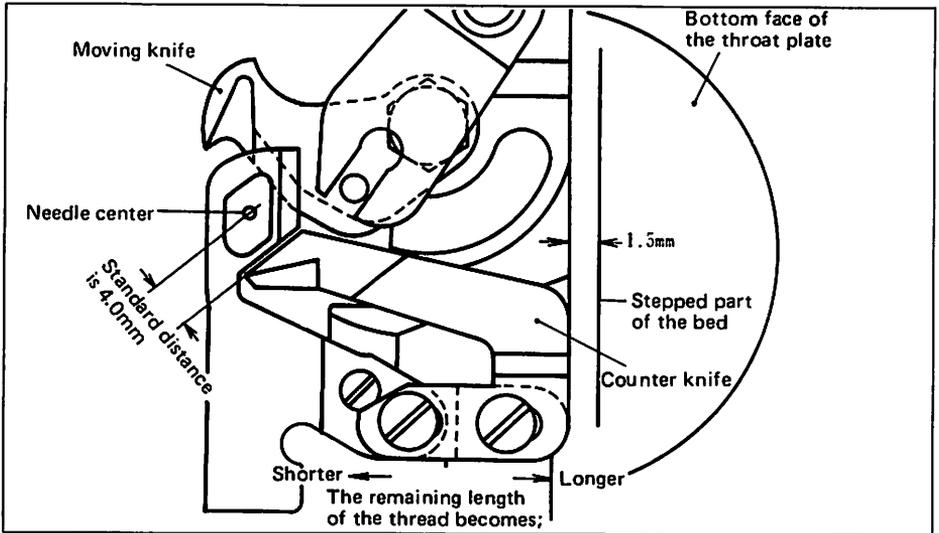
"MATSUSHITA" motor:

Remove the cover from the synchronizer and adjust the installation angle of the magnetic plate.

8. Sharpening the counter knife



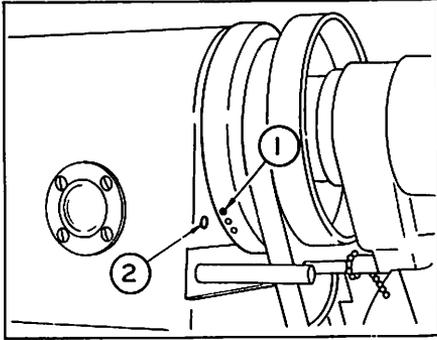
- As soon as you noticed that the thread trimmer has become dull, sharpen the counter knife immediately.
- Put the resharpened counter knife back to its correct position shown by the following illustration.
- If you move the installing position of the counter knife to the right from the standard position, the length of thread remaining on the needle after trimming becomes longer and vice versa.



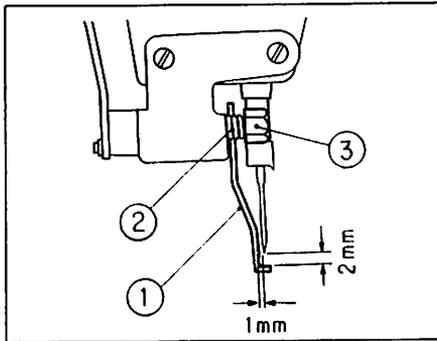
IV. HOW TO ADJUST THE WIPER

1. Adjusting the position of the wiper

You must adjust the position of the wiper according to the thickness of the material to be sewn in the following way;

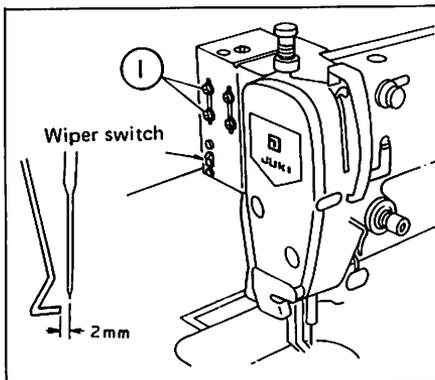


- 1) Rotate the handwheel manually in the normal direction so that the white dot ① on the handwheel coincide with the red dot ② on the frame.



- 2) Insert the wiper ① into the wiper driving shaft ② so that the vertical clearance between the wiper edge and the needle point becomes 2 mm and also the parallel clearance between the needle center and the straight inside face of the wiper becomes 1 mm. Fix the wiper at such a position by tightening the lock nut ③ .

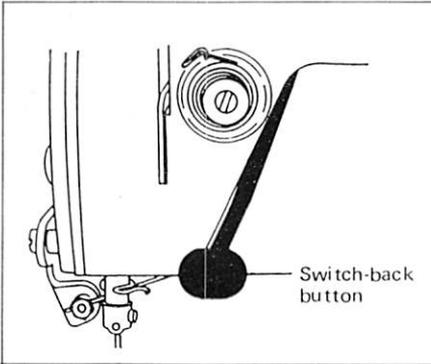
2. Adjust the position of the wiper magnet



Pull the plunger fully into the coil, loosen the screw ① which is clamping the wiper magnet and adjust the position of the wiper magnet so that the wiper tip is positioned with a clearance of 2 mm from the center line of the needle. After a correct position has been obtained, fix the wiper magnet at that position by tightening the screw. When you do not use the wiper, turn off the wiper switch.

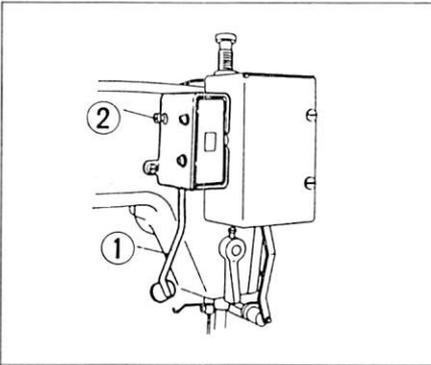
V. HOW TO USE AND ADJUST THE SWITCH-BACK BUTTON

1. Forming the switch-back stitches



- ① Push the switch-back button, and the machine will perform a reverse feed to form the switch back stitches.
- ② As long as the button is kept pressed, the machine will perform the reverse feed.
- ③ As soon as the button is released, the machine will reverse to the normal feed.
- ④ When you sew the half stitches, use the reverse feed control lever.

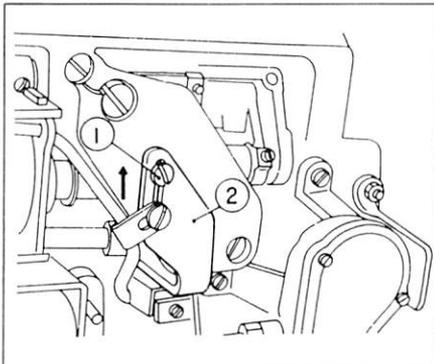
2. Adjusting the position of the switch-back lever



You may change the position of the switch back button ① to a suitable height for your operation.

Loosen the screw ②, move the switch lever up and down and obtain a suitable height. Tighten the screw firmly after adjustment.

3. Adjusting the reverse stitch length

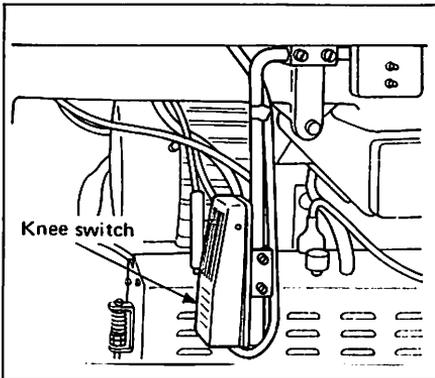


An excessive length of reverse stitch is usually formed by the operator until he gets used to operate this new device. In such a case, it would be advisable to shorten the seam line with the reverse feed by decreasing the stitch length of reverse feed in comparison with the stitch length with the normal feed, if it is permissible. To lessen the length of the reverse stitch, loosen the screw ① and push up the stopper plate ②. If you push it down to the normal and reverse feeds are identical.

VI. AUTOMATIC PRESSER FOOT LIFTER, AK-2(Optional attachment)

The automatic presser foot lifter AK-2 is an optional attachment which is capable of lifting the presser foot and holding it at the highest position for 10 to 15 seconds after thread trimming has been made. A special motor is used for this lifter AK-2.

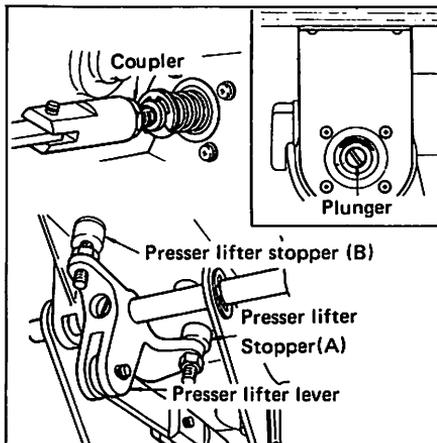
1. How to operate AK-2



If you want to raise the presser foot during a sewing work, press the knee switch. Such raised presser foot will be coming down immediately after the knee switch is released.

If you want to bring down the presser foot which has been raised as the result of an automatic run, tread on the pedal forwards (toe-down) or push and release the knee switch.

2. Adjusting the presser lifter stroke



1. Loosen the lock nut of the coupler.
2. Lower the presser foot stopper (A) fully by loosening the lock nut.
3. Push the knee switch to drive the solenoid.
4. You can adjust the stroke of the presser foot by rotating the plunger on the far side of the solenoid; the stroke is increased by a clockwise turn and is decreased by a counterclockwise turn.
(The maximum stroke performed by the presser foot is about 8 mm (5/16")).
5. Raise stopper (A) until it hits the oil reservoir by activating the solenoid.
6. Raise the stopper (A) by rotating it another half turn after releasing the knee switch.
7. Tighten the lock nuts of the stopper (A) and the coupler respectively.

8. Loosen the lock nut of the stopper (B), push the presser lifter lever towards the solenoid with your hand and adjust the height of the stopper (B) so that the playing gap between the top end/of the knee lifter rod and the knee lifter connecting rod located on the machine head become about 1 mm (3/64"). After obtaining a proper position, retighten each lock nut.

VII. TROUBLES AND CORRECTIVE MEASURE

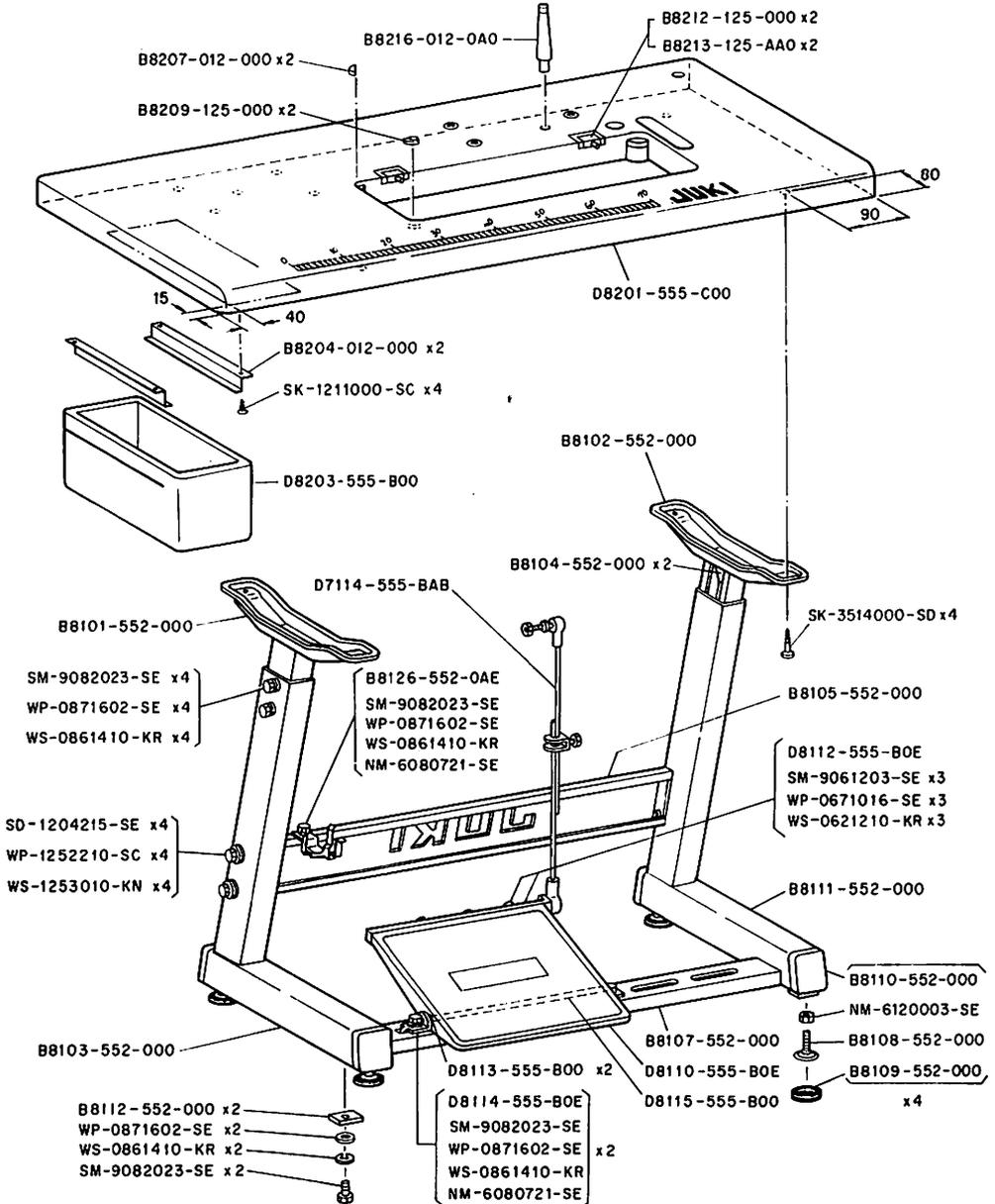
Troubles	Causes	Corrective measures	Page
1. Thread breakage	1) Thread quality is poor.	○ Use the thread of better quality.	17
	2) Thread is too thick for the needle size.	○ Correct the combination of thread and needle.	
	3) Thread is broken by the heat of the needle.	○ Prevent the needle from over-heating (synthetic thread).	16
	4) Thread tension is too high.	○ Reduce the thread tension.	
	5) Thread path on the sewing hook, throat plate, tension discs, thread take-up or other components has scratches or burrs.	○ Remove such scratches or burrs from the thread path by using an oilstone or buff, or replace the defective parts.	23
	6) Stitches are skipping.	○ Provide the sewing hook blade with a proper clearance from the needle and a correct timing. Ensure the needle bar height.	
	7) Bobbin thread tension is too low.	○ Adjust the thread tension between the needle and bobbin threads.	17
	8) The needle recess does not face to the correct direction.	○ Insert the needle in the correct way.	17
2. Stitch skipping	1) Distance from the sewing hook blade from the needle is not correct.	○ Correct the clearance and timing of the sewing hook related to the needle.	23
	2) Needle bar height is not correct.	○ Align the engraved line of the needle bar with the bottom end of the needle bar lower bushing.	23
	3) Needle is bent.	○ Replace the needle.	16
	4) Needle hole in the throat plate is too great.	○ Bring down the needle bar and increase the sewing hook stroke (it occurs in light-weight materials).	
	5) Needle slot in the presser foot is too great.	○ Bring down the needle bar and increase the sewing hook stroke.	18
	6) Thread clings to the heated needle.	○ Prevent the needle from over-heating.	
	7) Thread tension No. 1 is too high.	○ Reduce the thread tension by turning counter-clockwise the tension nut No. 1.	16
	8) Presser foot does not give a sufficient pressure to the works.	○ Increase the presser bar pressure.	18
	9) Bobbin thread tension is too low.	○ Increase the bobbin thread tension.	17

Troubles	Causes	Corrective measures	Page
3. Isolated idling-loops ("Baloostitch")	1) Sewing hook is defective. 2) Adjust the sewing hook.	○ Replace the sewing hook. ○ Increase the sewing hook stroke.	22
	3) Needle is too thin. 4) Feed dog teeth does not jut out enough from the throat plate surface. 5) Presser foot is not suitable.	○ Use a thicker needle. ○ Increase the height of the feed dog. ○ Use a feed dog which has a wider needle slot and a larger relief angle on its bottom face.	17 21
4. Wobbling or waving stitches.	6) Needle thread tension is too low. 7) Tension of the thread take-up spring is not enough.	○ Increase the needle thread tension. ○ Increase the spring tension.	16 16
	1) Bobbin thread tension is too high. 2) Needle is too thin. 3) Thread is too thick. 4) The recess of the needle does not face to the correct direction. 5) Needle bar thread guide.	○ Reduce the bobbin thread tension. ○ Replace the needle. ○ Replace the thread. ○ Insert the needle in the correct direction. ○ Use a smaller thread guide.	16 17 17 17
5. Idle stitching.	1) Inclination of the feed dog is not proper. 2) Presser foot is not suitable. 3) Position of the feed dog is not proper. 4) Thread tensions are not proper.	○ Raise the front part of the feed dog (front-up position). ○ Refer to the above 3-(5). ○ Move the feed dog closer to the operator. ○ Reduce the thread tensions.	21 16
	6. Loose stitch.	1) Needle thread tension is too low. 2) Bobbin thread tension is too high. 3) Thread is too thick for the needle. 4) Thread take-up lever excessively takes up the thread. 5) Feed timing is too early. 6) Feed dog teeth does not jut out enough from the throat plate surface. 7) Thread does not smoothly pass through the sewing hook, throat plate, tension discs, thread take-up or other thread paths. 8) Tension of the thread take-up spring is not enough.	○ Increase the needle thread tension. ○ Reduce the bobbin thread tension. ○ Change the combination of the needle and thread. ○ Move upwards the thread guide (A) on the arm. ○ Delay the feed timing. ○ Slightly increase the height of the feed dog. ○ Polish the surface of thread paths. ○ Increase the spring tension.

Troubles	Causes	Corrective measures	Page
	9) Bobbin thread tension is not stable while it is being pulled out. 10) Bobbin fails to smoothly spin in the bobbin case.	<ul style="list-style-type: none"> ○ Replace the bobbin or bobbin case. ○ Replace it with an aluminium bobbin. 	
7. Puckering	1) Needle thread tension is too high.	○ Reduce the needle thread tension.	16
	2) Thread paths on the sewing hook, throat plate, tension discs or thread take up lever does not have a smooth surface.	○ Polish the surface of such thread paths.	
	3) Feed timing is too early.	○ Adjust the feed timing to the standard or a little later than the standard.	20
	4) Inclination of the feed dog is not proper.	○ Raise up the front part of the feed dog (front-up position).	21
	5) Position of the feed dog is too high.	○ Correct the feed dog height.	21
	6) Needle is too thick.	○ Replace it with a thinner needle.	17
	7) Bobbin does not spin in the bobbin case.	○ Replace it with an aluminium bobbin.	
	8) Needle slot in the throat plate is too great.	○ Use a throat plate which has a small needle slot.	
	9) Tension of the thread take-up spring is too high.	○ Reduce the tension of the thread take-up spring.	16
8. Slipping of cloths.	1) Presser foot does not give a sufficient pressure to the cloths.	○ Increase the pressure of the presser bar.	18
	2) Inclination of the feed dog is not suitable.	○ Raise up the front part of the feed dog (front-up position).	21
	3) Feed timing is too late.	○ Make the feed timing earlier.	20
	4) Failure in material feed.	<ul style="list-style-type: none"> ○ Use a feed dog with the course teeth. ○ Use a feed dog with the up-right teeth. ○ Use a feed dog with the teeth of a sharper pressure angle. 	
9. Irregular stitches (as sewing speed changes)	1) Sewing speed is too high.	○ Reduce the sewing speed.	2
	2) Needle thread tension is too high.	○ Reduce the needle thread tension in relation with the bobbin thread tension.	16
	3) Bobbin thread tension is too low.	○ Increase the bobbin thread tension in relation with the needle thread.	17
	4) Thread path on the sewing hook, throat plate, tension discs, thread take-up lever and other components does not have a smooth surface.	○ Polish such thread paths by using an oilstone or buff.	

Troubles	Causes	Corrective measures	Page
	5) Tension of the thread take-up spring is not enough. 6) Thread guide (A) on the arm is not properly positioned. 7) Bobbin does not smoothly spin in the bobbin case.	<ul style="list-style-type: none"> ○ Reduce the stroke and increase the tension of the take-up spring. ○ Move the thread guide (A) upwards. ○ Replace it with an aluminium bobbin. 	16 25

VII. DIAGRAM SHOWING METHOD OF ASSEMBLING TABLE JZ-D31





TOKYO JUKI



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