

JUKI

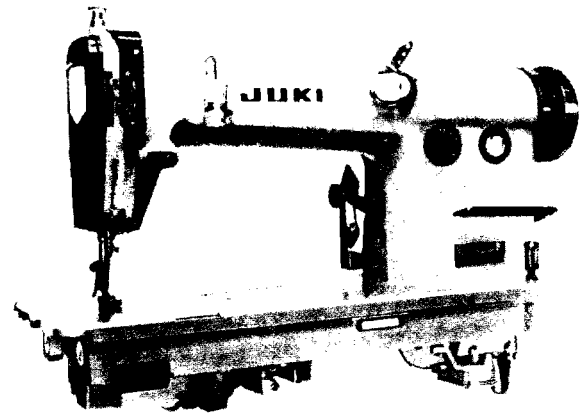
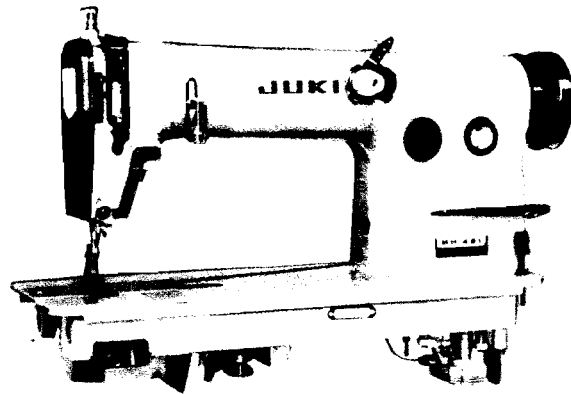
High Speed, Flat Bed, 1-Needle, Double Chainstitch
Industrial Sewing Machine with Reverse Feed

MH-481

High Speed, Flat Bed, 1-Needle, Double Chainstitch
Differential Feed Industrial Sewing Machine with Reverse Feed

MH-484

INSTRUCTION MANUAL



No.00

BE4810T0BOA

INTRODUCTION

Your JUKI Industrial Sewing Machine Model MH-481 and 484 are mainly featured by the following functions:

MH-481

This model forms double chainstitch and provides reverse stitching at the end of sewing to prevent revelling.

MH-484

In addition to the same function that MH-481 has, this model has the differential feed mechanism, by which both stretch and gather sewing are possible. A quite useful model to apply stretch sewing to jersey and knitted fabrics and also to prevent general fabrics from puckering and slipping. Special gather sewing attachments installing in MH-484 are available;

S060 Gather sewing attachment

S061 Intermittent gather sewing attachment

Since only the presser and feed mechanisms of model MH-484 are different from those of model MH-481, this Instruction Manual is compiled firstly to explain the adjustments for model MH-481 including the common components to MH-484 and lastly to mention the particular adjustments for model MH-484.

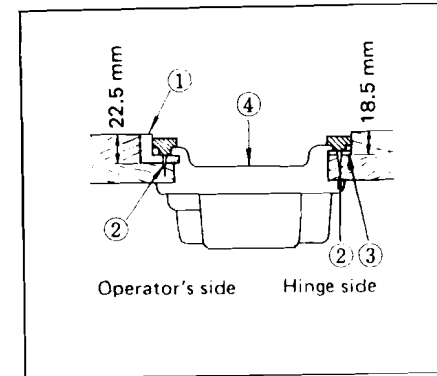
Before you start to use your JUKI Sewing Machine, throughly read this Instruction Manual for correct and best use of it.

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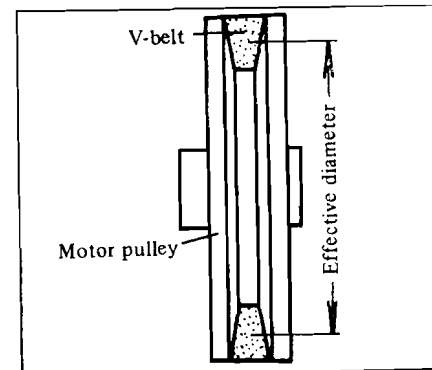
1. HOW TO SET UP THE MACHINE

1) How to install the oil reservoir



Install the oil reservoir in the way that it is supported by four corners of the opening in the table. Nail two rubber cushions 1 to a protruded edge from the table opening at operator's side using nails 2 and also attach two head-rest cushions 3 to a protruded edge at the far end (hinge side) using nails 2, and the place oil reservoir 4 on the cushions.

2) Motor pulley and the belt



MH-481 can sew at a maximum speed of up to 5,500 s.p.m. Accordingly, use a clutch motor of 3 phase AC 400W (1/2 HP). Use a V-belt of M type.

*The relation between the motor pulley and the number of rotation of the machine is shown by the following table. (The effective diameter of the motor pulley means the diameter as measured from the center of the V-belt when it is wound around the pulley)

The most appropriate length of the V-belt is 42 — 43 inches.

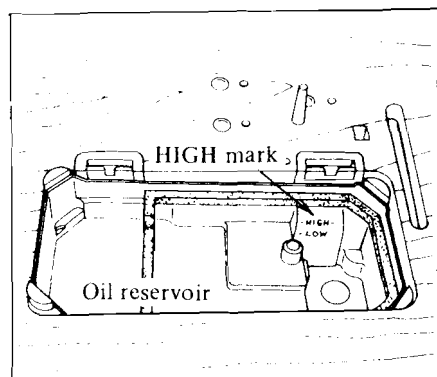
Frequency	Number of rotation of machine	Motor pulley No.	Effective diameter of motor pulley	Remarks
50 Hz	5,500 s.p.m.	MTKP0130000	130 φ	
	5,000 s.p.m.	MTKP0120000	120 φ	
	4,500 s.p.m.	MTKP0110000	110 φ	
60 Hz	5,500 s.p.m.	MTKP0110000	110 φ	
	5,000 s.p.m.	MTKP0100000	100 φ	
	4,500 s.p.m.	MTKPV090000	90 φ	

2. HOW TO OPERATE THE MACHINE

1) Cautions on operation

- ① Do not operate the machine without filling up the oil reservoir with sufficient oil.
- ② The direction of the rotation of the machine is toward the operator. Do not run the machine in the reverse direction.
- ③ The maximum rotational speed of the machine is up to 5,500 s.p.m. but for the first month drop this speed to about 4,500 s.p.m.
After that, run the machine with appropriate speed depending on the nature of work, kind of sewing material or sewing thread and capability of the operator.

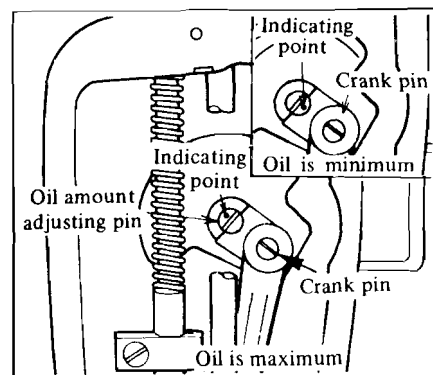
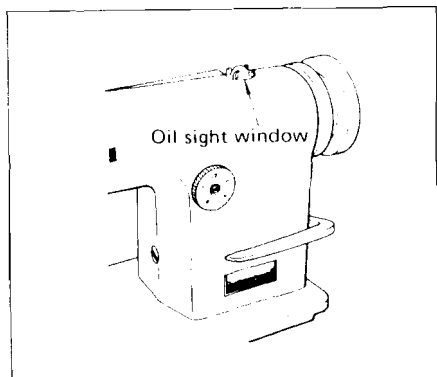
2) Lubrication



1. Before running the machine, fill up the oil reservoir with JUKI New Defrix Oil No. 1 up to the mark "HIGH".
2. Watch and see that the oil level does not go under the "LOW" mark.
3. 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.

(CAUTION)

In order to sufficiently lubricate those machines which are newly set up or had not been used for a long period of time let them idly run for about 10 minutes at a speed of 3,500 to 4,000 s.p.m.



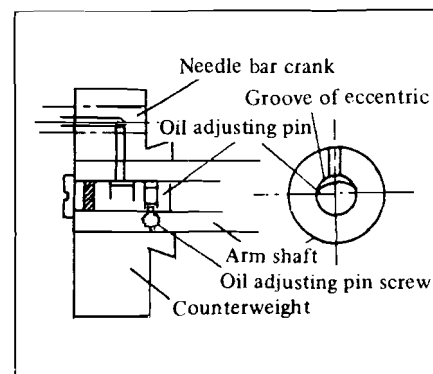
Adjusting the oil amount of the face part

When adjusting the oil amount to the needle bar crank parts, remove the face plate and adjust by rotating the oil amount adjusting pin at the end of the main shaft.

1. When the indicating point of the adjusting pin comes near the needle bar crank pin, the oil amount gets less and,
2. When the indicating point comes to the opposite point of the crank pin, the oil amount gets more.

CAUTION

The oil amount does not change immediately after adjustment, so have this in mind when adjusting the oil amount.



On oil amount adjusting pin

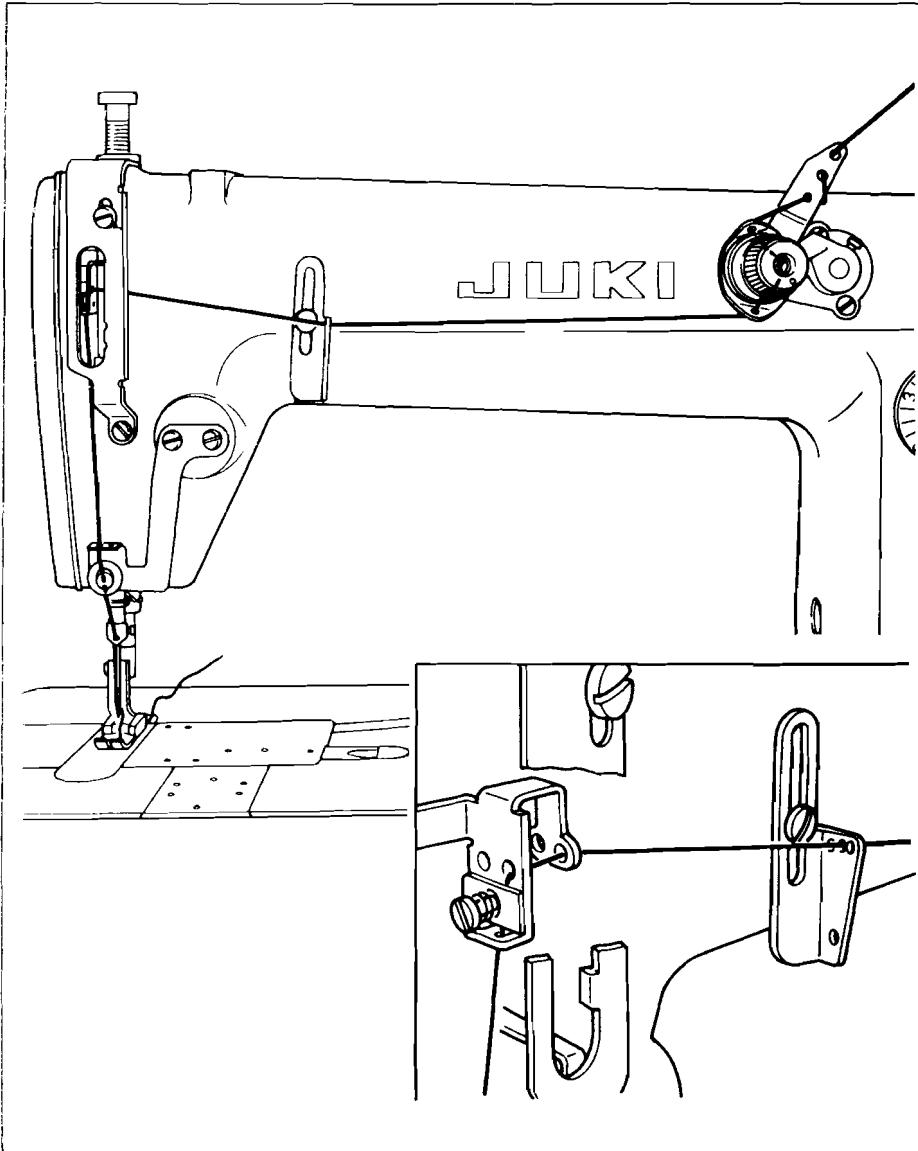
There is a carved groove on the oil adjusting pin as shown in the figure.

1. When this groove and the oiling hole of the main shaft are matched, the oiling amount becomes maximum.
2. When this groove comes to the opposite side of the oiling hole, the oiling amount becomes minimum.
3. The indicating point of the adjusting pin shows the side without the carved groove.

3) How to pass the needle thread

With the needle bar raised to its highest position, pass the thread in the order as shown in the figure.

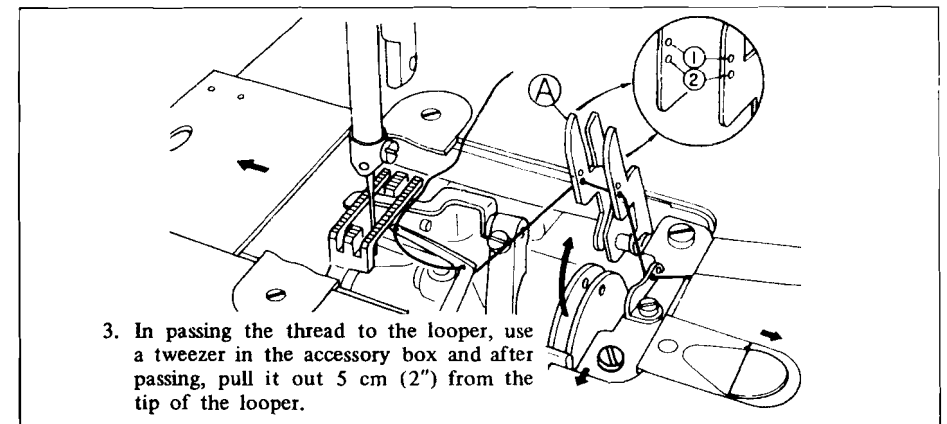
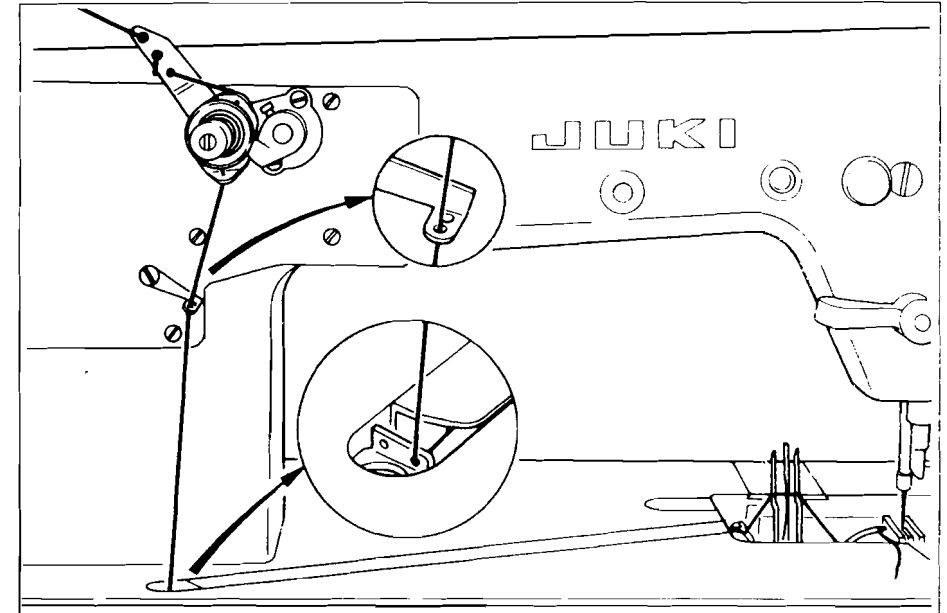
1. Pass the thread to the needle hole toward the opposite side of the operator from the operator side.
2. Pull out the thread which was passed through the needle about 10 cm (4").



4) How to pass the looper thread

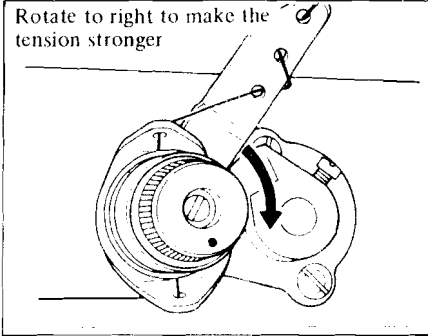
Pass the looper thread as shown in the figure.

1. Pass the looper thread through the looper thread guide plate as illustrated. When using a hard-twisted thread or when sewing with a large feed pitch, pass it through 2 holes to form a loop. When sewing fine materials which tend to pucker, pass the thread through only one hole in order to lessen the thread tension.
2. Pull the plate spring in the direction of arrow as shown in the lower figure, and the thread guide $\text{\textcircled{A}}$ will come up. As the close-up figure shows, the thread guide has two sets of thread holes; the holes $\text{\textcircled{1}}$ are used when a stitch is preferably formed with soft looper thread tension, a stretchable thread is used or stitch length is more than 3 mm (1/8"), and the holes $\text{\textcircled{2}}$ are used when a stitch having a normal thread tension is preferred.

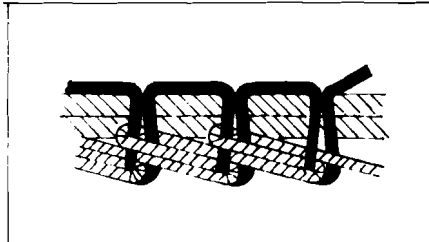
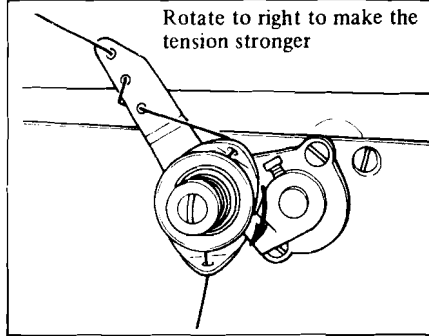


5) The thread tension

Adjusting the needle thread tension

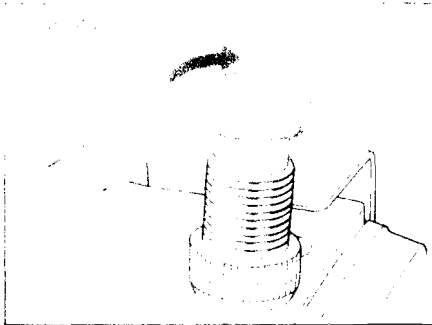


Adjusting the looper thread tension



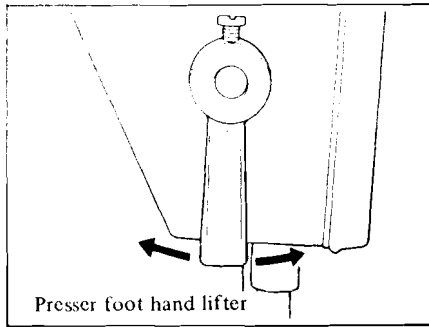
6) Presser foot and feed dog

Adjusting the pressing pressure



If the pressure adjusting screw is turned to right, the pressure becomes stronger and if it's turned to left, the pressure becomes weaker. The standard pressure is 5 kg.

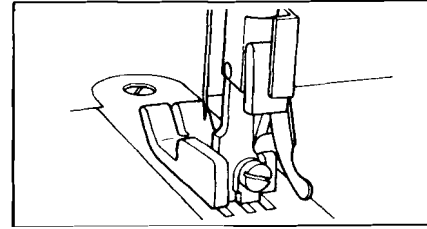
On presser foot hand lifter



To stop the presser foot at the lifted position, rotate the presser foot hand lifter either to right or left.

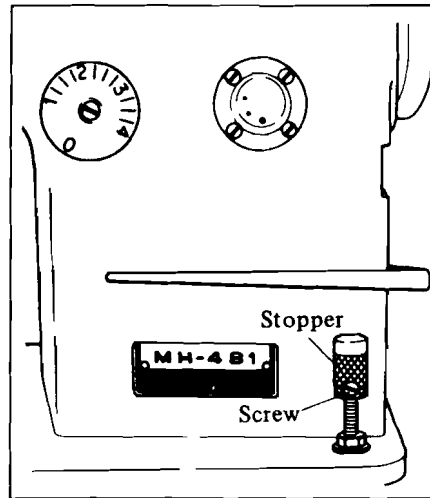
To lower the presser foot, manipulate the knee lifter once and the presser foot will return to its original position.

On chain-off thread presser



Irrespective of high speed or low speed sewing, a small chain-off thread presser is built-in in the MH-481 model so that the chain-off thread comes out easily. Conventional presser foot for general lock stitch can be used if no question is asked for chain-off thread.

7) On stitch length



Adjusting the stitch length

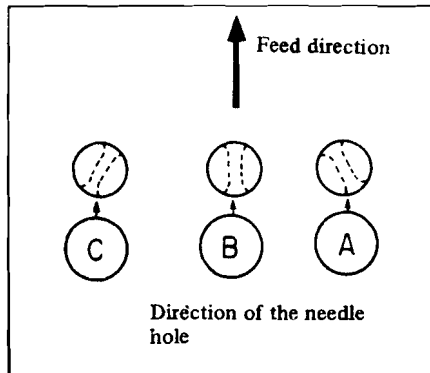
The stitch length of this model can be adjusted by rotating the feed adjusting dial on top of the feed lever.

The figures on the graduation scale is shown in millimeter (mm).

1. Rotate the feed adjusting dial either to right or left and
2. Match the wanted figure with the pin coming out from the frame.
- * The maximum stitch length is 4 mm (5/32").
3. If the lever is pushed, it becomes reverse sewing with the standard pitch of 2mm (5/64").
4. If the position of the lever stopper is raised, the pitch of the reverse sewing becomes small.
5. If the position of the lever stopper is raised up further (loosen the nut and pull the stopper up) and the lever is pushed, it is possible to sew with normal sewing with small stitch length.

Take advantage of this feature for bartacking at the start of sewing or end of sewing.

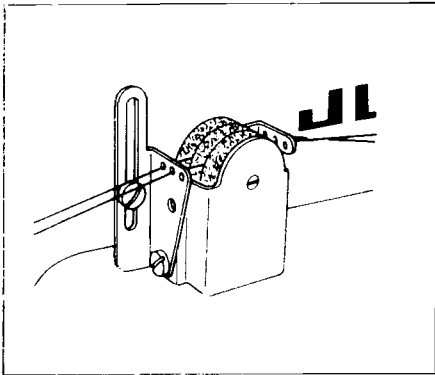
8) How to install the needle



The designated needle is TV x 7, #9~#21.

For stabilizing the reverse sewing, do not make the direction of the needle as shown in the figure ©.

9) How to install the silicon oil lubricating unit

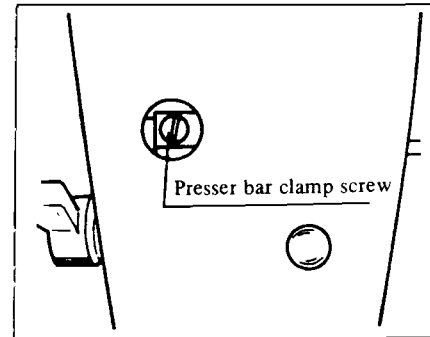


MODEL MH-481 is provided with SILICON OIL LUBRICATING UNIT for sewing with synthetic or mixed synthetic thread.

As shown in the figure left, install the silicon oil lubrication unit into the frame thread eyelet.

3. ADJUSTING THE MACHINE

1) Adjusting the presser foot and the feed dog

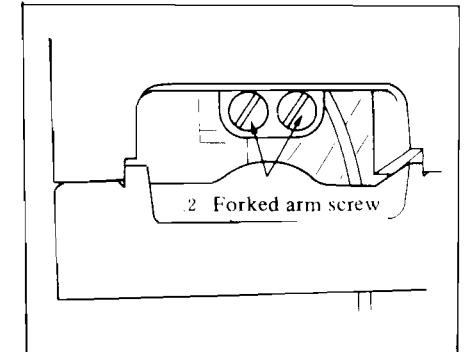
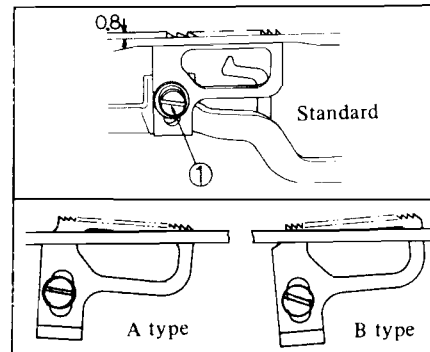


Adjusting the height of the presser bar

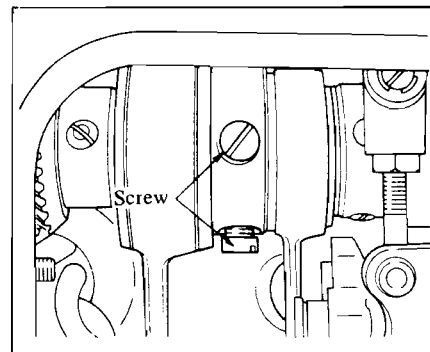
When the height or the direction of the presser bar is to be changed due to the exchange of presser foot:

1. Remove the rubber plug of the face plate.
2. From this hole, adjust by loosening the presser bar clamping screw.
3. After the adjustment, securely tighten the set screw.

How to install the feed dog

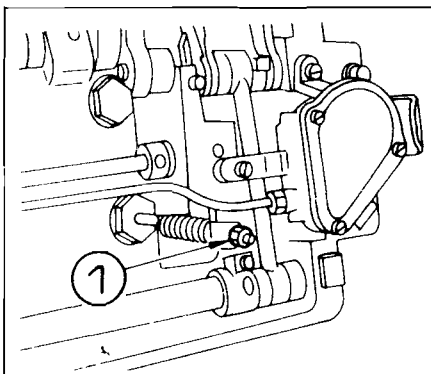


If the screw (2) of figure is loosened, the slant of the feed dog can be adjusted either to A type or B type. The maximum protruding amount of the feed dog is 0.8 mm (1/32"). Adjust to this amount by screw (1).



Matching the needle and the feed dog

When the needle point has dropped to 3mm (1/8") bottom the surface of the throat plate, adjust the position of the feed dog by the screw of figure so that the feed dog sinks just below the lower surface of the throat plate.

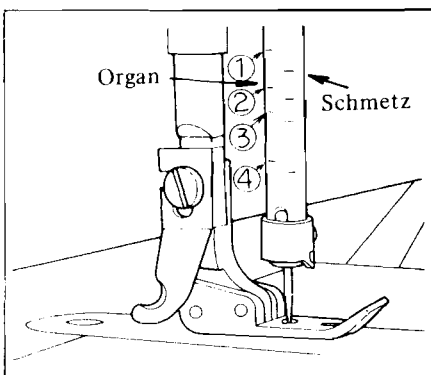


Adjusting the pressing pressure of the feed lever

The reversing spring of the feed lever is strengthened somewhat so that at high speed sewing, no matter what kind of stitches are to be formed, the lever returns positively to the original position.

When the stitching pitch is small or when the machine is to be run by lowering the r.p.m., the pressing pressure of the feed lever can be lessened by loosening the adjusting nut ① of the accompanying figure.

2) On needle bar and needle

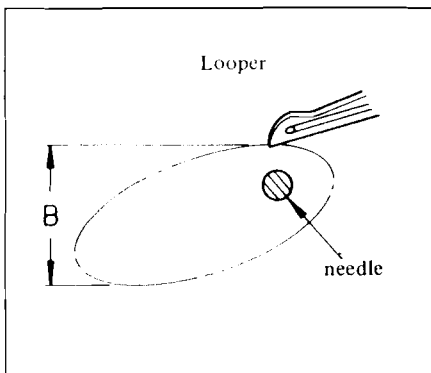


Adjusting the height of the needle bar

When an Organ needle (TV x 7) is used, set the height of the needle bar so that when the needle bar has reached to lower dead point, the left side carved line (No.1 mark) matches with the bottom surface of the needle bar lower bushing. (See figure)

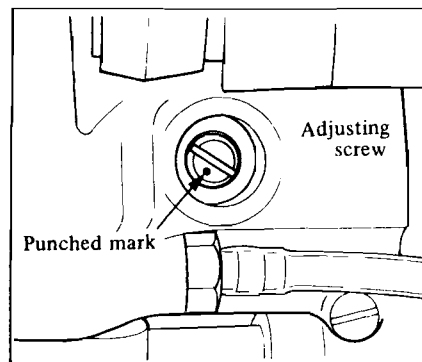
Also, when the Schmetz needle (UY-128GAS etc.) is used, match it so that the right side carved line comes to the position as mentioned above. (At this condition, the distance between the needle point and upper surface of the throat plate becomes 10.0mm(25/64").

3) Matching the needle and the looper

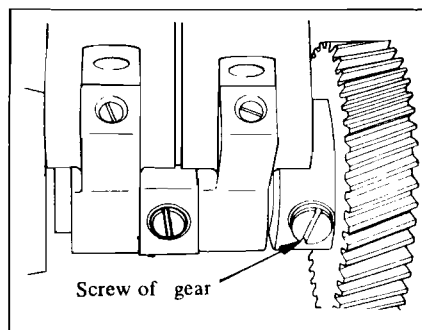


Adjusting the looper avoiding motion

Within the oval movement of the looper, the dimension of B in the figure can be adjusted in the following order.



- 1 Remove the rubber cap.
- 2 Rotate the hand wheel with the hand.
- 3 The heads of the plated adjusting screw ①, flat top screw, clamp screw will appear in that order, so at first, loosen the 2 screws, flat top and clamp screw.
- 4 If the punched mark of the adjusting screw ① is brought to right side, the dimension of B becomes bigger.
- 5 Adjustment is made depending on the size number of the needle but normally it is adjusted to #11 needle.
- 6 The adjustment should be made so that the looper goes as near the needle side as possible and returns. Then, after setting the position by tightening the flat top screw, securely tighten the clamp screw.

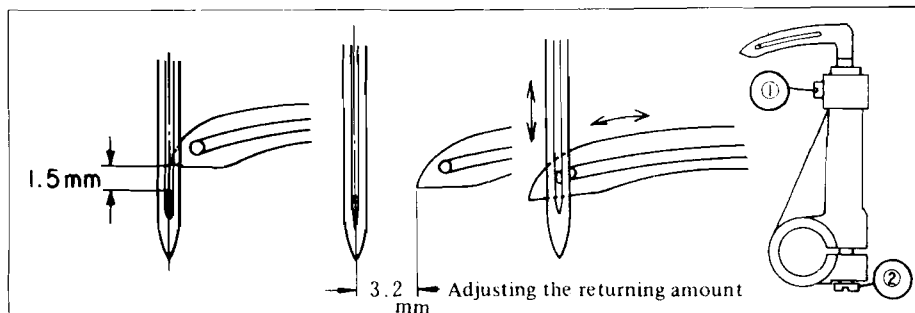


Matching the looper

When the needle is at the lowest point, the looper comes to extreme right position. This adjustment is made by loosening the screw of the gear.

Scooping amount of the looper

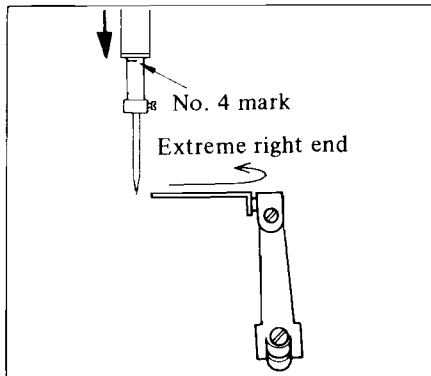
When the blade point of the looper has reached the center of the needle, the standard distance between the blade point and the upper end of the needle hole is 1.5mm(1/16"). When the No. 2 carved line of the needle bar is matched with the lower edge of the needle bar lower bushing, adjust so that the blade point of the looper comes to the center of the needle. The returning amount of the looper comes to approximately 3.2mm(1/8") and the relative relationship of the needle hole and the thread hole of the looper becomes as shown in the figure.



Clearance between the looper and the needle

The clearance between the looper and the needle when the looper scoops up the thread should be as narrow as possible. After adjusting the needle guard, re-confirm this condition.

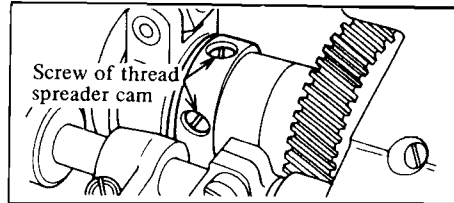
4) On thread spreader



Thread spreader is necessary in case of reverse sewing and at the same time it is very important to obtain stable stitches without skip-stitching in case of normal feed sewing.

The timing of thread spreader against the needle

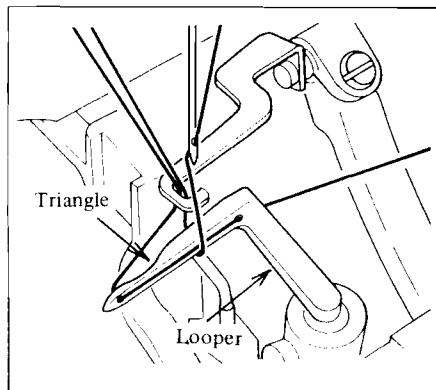
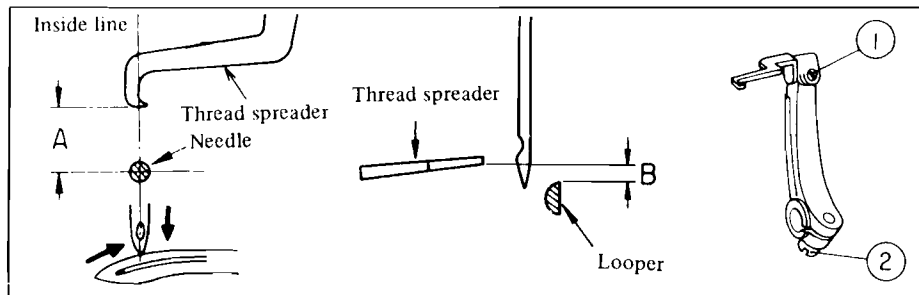
As shown in the figure, when the No. 4 mark of the needle bar appears from the bottom of the needle bar lower bushing, set the thread spreader with the thread spreader cam set screw, as shown in the figure, so that the thread spreader comes to extreme right end.



Position of the thread spreader latch

When the pointed end of the descending needle arrives the level of upper surface of the looper, adjust the thread spreader to the position shown by the figure.

- 1) The right and left direction should be such that the inside surface of the thread spreader should match with the center of the needle.
- 2) Adjust so that the front and back dimension A should be 2 mm (5/64") with the screw ①.
- 3) The height should be adjusted so that the clearance between the bottom surface of the thread spreader and the upper surface of the looper to be 0.2 mm (1/100") with the screw ②.

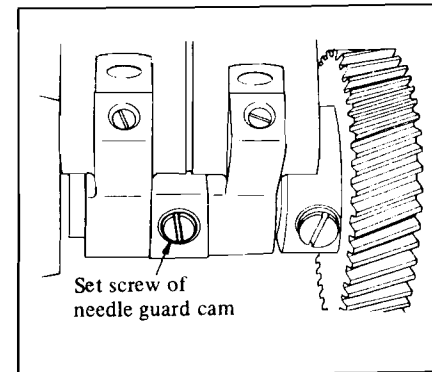


Method of thread spreader

- ① When the thread spreader latch returns, the tip of the thread spreader latch is positively grasping the looper thread and one side of the needle thread loop until the needle point enters the triangle of the thread.
- ③ After the needle point has entered the triangle, the looper should release the thread.

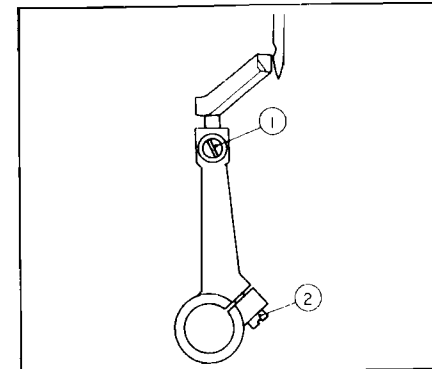
Above are the thread spreader adjustments for both normal and reverse stitches to form correct stitches.

5) Needle guard and loop guide



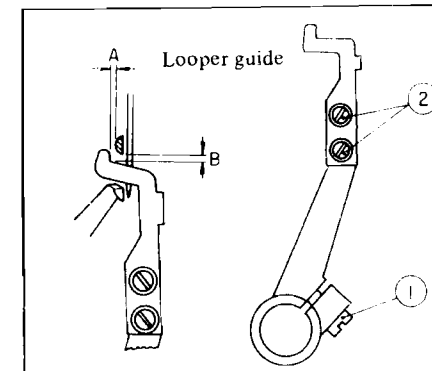
The timing of the needle guard

The timing of the needle guard is determined by matching the first screw of the figure with the flat part of the shaft.



Position of the needle guard

When the looper scoops up the needle thread, adjust so that the needle point lightly touches the needle guard. Set the height as high as possible to about cover the needle thread loop. Loosen set screws ① and ② for this adjustment.

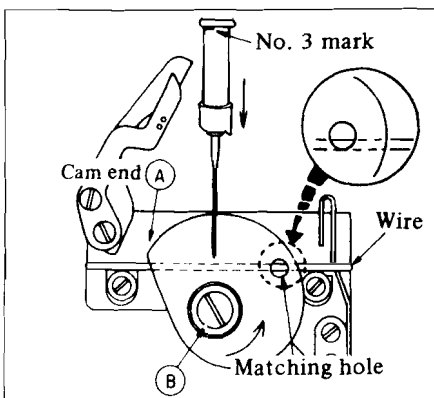


Position of the looper guide

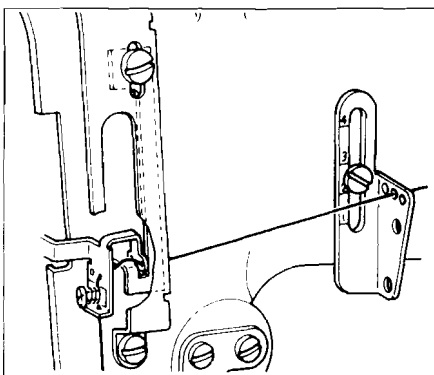
The looper guide should be installed as near the looper as possible so that it will not touch the looper. Adjust it so that the dimension of A will be about 0.2 — 0.5 mm (1/100" — 1/64"), and of B to be about 0.5 — 1.0 mm (1/64" — 3/64").

Dimension of A should be adjusted by loosening screw ① and of B loosen screw ②.

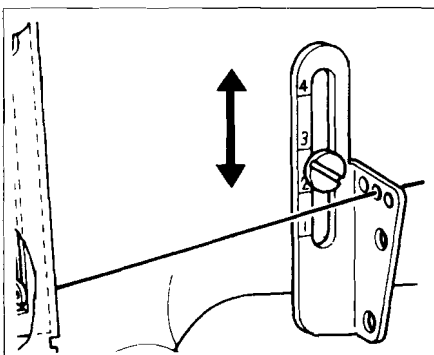
6) On looper thread cam



7) On the position of the take-up thread tension lever



8) On the frame thread eyelet



As shown in the figure, when the No. 3 carved line of the needle bar comes to the bottom surface of the needle bar lower bushing, make it so that the wire can be seen through the hole of the matching hole of the cam. The timing of the looper thread cam can be adjusted by loosening the screw B and after the position is determined tighten the screw securely.

After all adjustments are completed, verify the following:

1. Verify that when the looper thread came off from the protruded end A of the looper thread cam, the needle point has completely entered the triangle of the looper thread.
2. To especially avoid the puckering, adjust the looper cam so that the bottom end of its matching hole is aligned with the lower side of the wire with a little earlier timing, when the looper thread will not be drawn too much and a favourable thread tension will be obtained.

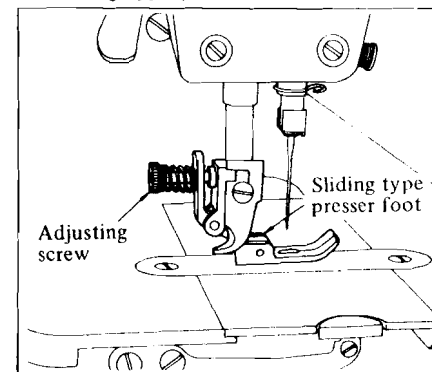
When the needle bar is at the lowest point, if the needle thread is pulled in by hauling motion by the take-up thread tension lever, the needle thread loop becomes big at the scooping time of the needle thread.

In case of normal fine thread, lower the needle to the lowest dead point.

The thread tightening changes according to the positions of the frame thread eyelet. When the frame thread eyelet is lowered, the tightening of the looper thread becomes weaker and if it's raised up, the tightening becomes stronger.

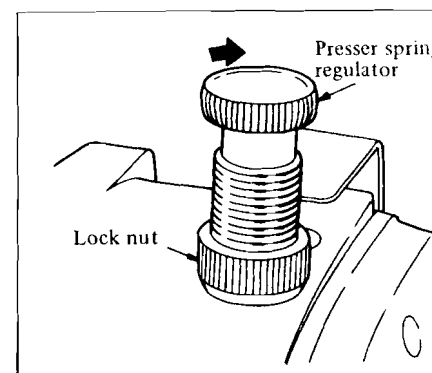
4. OPERATION AND ADJUSTMENT OF MH-484

1) Sliding type presser foot



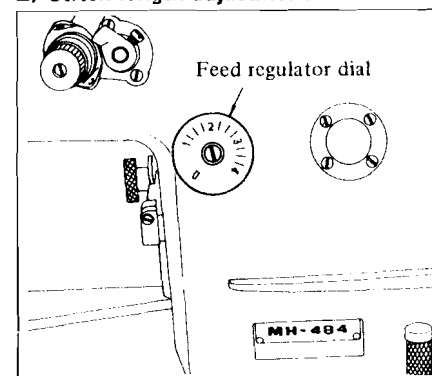
MH-484 has a sliding type presser foot. Adjust it as follows:

1. Firmly tighten the presser spring regulator.
2. Adjust for a proper sliding motion of the foot by tightening or loosening the adjusting screw on the presser foot; if the screw is too tight, the work will be slipped and if it is too loose, the work will not be fed or pucker.

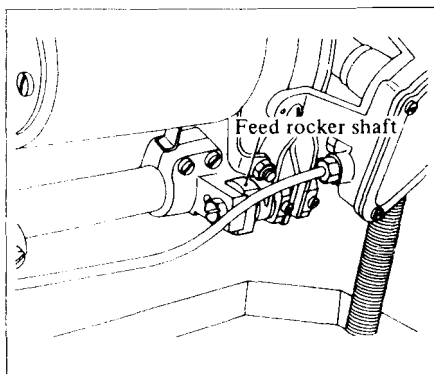


3. Loosen the presser spring regulator until the presser foot does not make a noise and tighten the lock nut.

2) Stitch length adjustment

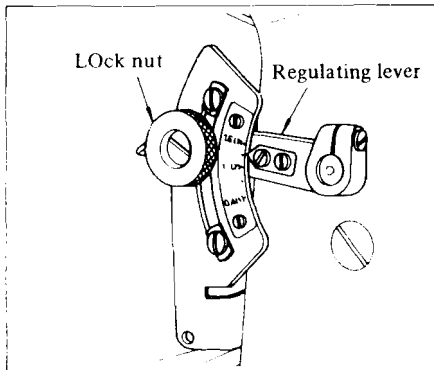


Set the feed regulator dial to a desired stitch length. (The dial is calibrated in mm)



When feed rocker shaft shows a greater motion like MH-484/S060, the stitch length or the dial indicates one half of the actual stitch length.

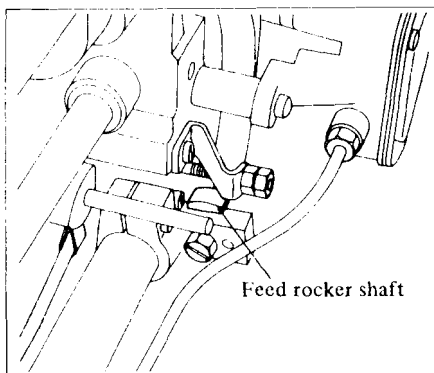
3) Differential feed adjustment



Loosen the lock nut of the regulating lever and adjust the lever angle; pull up the lever for gather stitch and push it down for stretch sewing.

The figures on the differential feed dial indicate the ratio of the auxiliary feed to the main feed.

(For example, "0.5" represents 0.9 mm of auxiliary feed when the main feed is 1.8 mm)



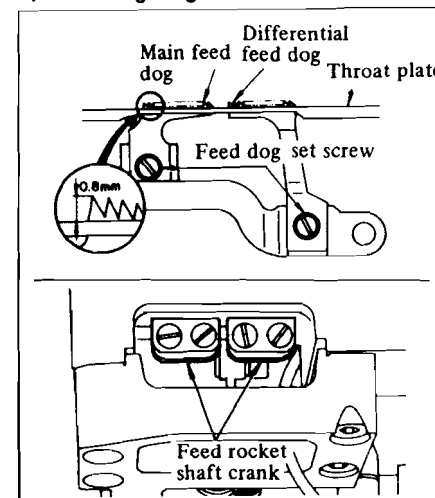
When a greater effect of gather stitch is required, provide the feed rocker shaft with a larger motion by increasing the radius of the arm.

For this purpose, use the figures in parenthesis on the dial.

(For example, "2.5" represents 4.5 mm of the auxiliary feed when the main feed is 1.8 mm)

However, take care that the feed ratio will vary according to the difference in the tooth pitch between the main and differential feed dogs. Therefore, the indication on the dial must be used as just a reference value.

4) Feed dog height

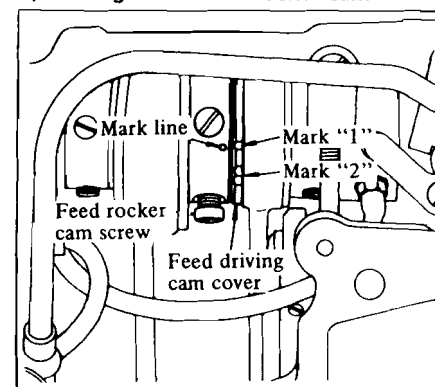


The standard height of the main feed dog is 0.8 mm (1/32") above the throat plate surface. At the highest point, the main feed dog must be in a front-up (down slope) posture and the differential feed dog must be in horizontal position as illustrated.

Also adjust the differential feed dog to sink in the throat plate simultaneously with the main feed dog.

These adjustments are made by means of the feed dog setscrews and the feed rocker shaft crank.

5) Timing of the feed rocker cam



Timing of the feed rocker cam (trajectory of the feed dog) must be changed for stretch or gather sewing.

Remove the side plate located on the rear of the machine arm and loosen the feed rocker cam setscrew.

Adjust the mark line on the feed rocker cam to the marks "1" shown by the feed driving cam cover for stretch sewing and "2" for gather sewing.

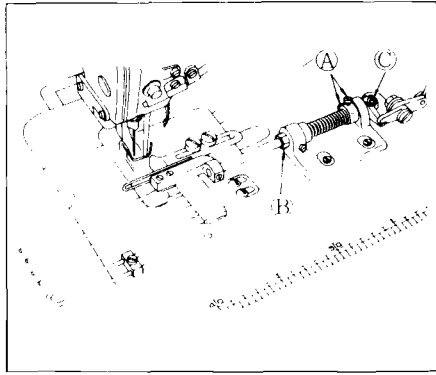
After adjusting the feed rocker cam, tighten its setscrew. All machines have been set for stretch sewing (Mark "1") before shipment, excepting MH-484 and MH-484-4-S060 & S061 which have been set for gather sewing (Mark "2").

After changing the timing of feed rocker shaft cam, readjust the height of the feed dogs accordingly.

6) Gather sewing attachment

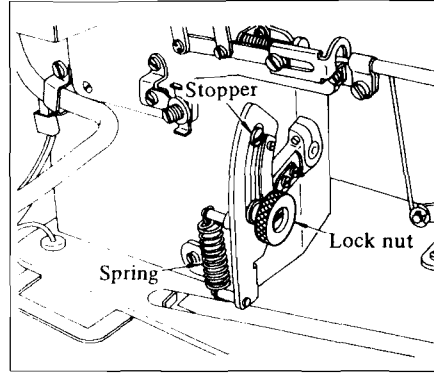
Attachments S060 and S061 are available for the model MH-484.

S060 (Gather sewing attachment)

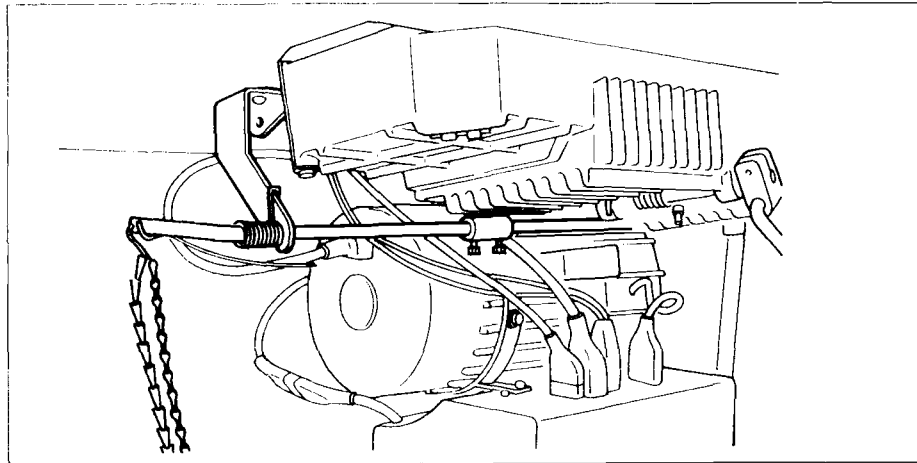


With S060, you can gather only the bottom cloth.

S061 (Intermittent gather sewing attachment)



With S061 you can intermittently sew gathers as you wish by operating the pedal lever.



Refer to the separate Instruction Book prepared for the S060, S061 for the details of adjustment.


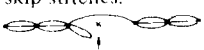



4. MAINTENANCE OF THE MACHINE

To maintain the machine in constant smooth running condition, be sure to do as follows:

- 1) Give the machine an overall inspection daily and verify its running condition.
 - * Verify if the oil is circulating smoothly by watching through the oil sight window.
 - * If a different operator is running the machine daily, be sure to have him contact an expert maintenance crew for guidance.
- 2) Inspect the following parts at least once a week:
 - * Throat plate, sliding plate and remove the cam cover and by using a brush dust off the dirt from the groove of the feed dog.
 - * Tilt the machine toward the opposite side and,
 - (1) Remove the thread hards stuck to the oil pump netting and remove the rubbish inside the oil reservoir.
 - (2) When the oil becomes dirty and blackish, pull out the oil plug and exchange the dirty oil with new, fresh JUKI Defrix Oil No. 1.
 - (3) Verify that the oil level is always above the "LOW" mark.
 - (4) Wipe away the black steel powder sticking to the magnet at the bottom of the oil reservoir.

5. MALFUNCTIONS & CORRECTIVE MEASURES

No.	Malfunctions	Causes	Corrective Measures	Ref. Page
1	Thread breakage	1. Quality of thread is bad.	① Use a better quality thread	7
		2. Thread is thick compared to needle.	② Change the needle or thread to proper size.	
		3. Thread breakage due to heat of needle.	③ This occurs on synthetic thread. Use silicon oil lubricant. Lower the r.p.m.	8
		4. Thread tension is too strong.	④ Weaken the thread tension.	6
		5. The thread path of needle, looper, throat plate, needle guard, looper guide and all other thread paths are bruised.	⑤ Sharpen with oil whetstone or by buffing.	14
		6. Due to twice passing of thread.	⑥ Activate the thread take-up tension lever.	
2	Skip-stitch	1. Skip-stitching of needle thread.	① Verify the scooping amount of looper.	11
		<p>2 stitches collapse *(This occurs when looper does not scoop needle thread)</p>	② Verify the clearance between the looper and needle.	11
			③ Verify the timing of the looper & needle.	14
		④ Depending on the thread, activate the thread take-up tension lever.		

No.	Malfunctions	Causes	Corrective Measures	Ref. Page
2	Skip-stitch		5. Verify the correct installation of the needle 6. Verify the timing of the needle guard. 7. Refer to the passing of the thread.	7 13 4, 5
			2. Loper thread skip-stitches.  * One stitch collapses Needle  Loper * (This occurs when the needle drops into the triangle of thread.)	1. Verify above ① & ③. 2. Verify the timing of the looper thread cam. 3. Adjust the position of the thread spreader hook 4. Make the tension of the looper thread stronger. 5. Refer to passing of the thread.
		3.  * Inadequate linking of loop. (This occurs when the needle thread is too much on left side.) Needle  Loper Besides above (In case of synthetic thread.)	1. Refer to 1. 3. of skipping of needle thread. 2. Verify the timing of the thread spreader and position of hook of the looper 1. Drop the sewing speed 2. Use silicon oil lubricant. 3. Use needle for synthetic thread.	12 1 8
		(In case of mixed synthetic thread.)	① Make the scooping amount of looper greater ② Drop the sewing speed ③ Use silicon oil lubricant	11 1 8
3	Inadequate tightening of thread	1. When the needle thread tension is weak.	① Tighten the needle thread tension nut.	6
		2. When the bobbin thread tension is strong.	② Loosen the looper thread tension nut.	6
		3. Insufficient pulling out of looper thread cam.	③ Change the thread passing to looper thread cam.	14
		4. The thread is too thick against the needle.	④ Change the needle.	7
		5. Depending on the position of intermediate thread guide.	⑤ Lower the position of the frame thread eyelet.	14

No.	Malfunctions	Causes	Corrective Measures	Ref. Page
		6. Position of the thread take-up thread tension lever. 7. The throat plate	⑥ Raise up the position of the lever. ⑦ Use large needle hole throat plate	14
4	Needle breakage	1. Needle may be curved. 2. Inspect the timing of the feed dog with the needle. 3. Inspect the installation of presser foot.	① Change the needle. ② Is the timing correct ? ③ See if the hole of presser foot, hole of throat plate and loop guide plate are placed in the center of needle.	7 10, 11
		4. Needle guard 5. When the tension of the needle thread is too strong. 6. Thickness of needle.	④ Verify the timing and position of needle guard. ⑤ Make the tension of the needle thread weaker. ⑥ Select the correct size needle to conform to the nature of the sewing cloth and its thickness.	13 6 7
5	Puckering	1. Tension of thread is too strong. 2. Timing of the looper cam. 3. Processed condition of thread path. 4. When the pressure given by the presser foot is too high. 5. Needle 6. Throat plate	① Sew with weaker tension. (Especially, lower the tension of looper thread) ② Set the timing to a little earlier. ③ Polish the thread path with lapping agent on thick thread #8 ④ Tighten the adjusting screw. ⑤ Use a finer needle. ⑥ Use a throat plate designed for fine materials. ⑦ Ratio of differential feed; Apply 1:0.7 ratio for gathering.	6 14
		1. Presser foot 2. Pressure of the presser foot.	① Use a sliding type presser foot. ② Reduce the pressure.	

(Please note)
* Due to improvements on the mechanism of the machine, the method of operation and some part of the specification may have to be changed without previous notice.