



**INDUSTRIAL SEWING MACHINE
MODEL**

LS2-1380

<Classes>

**High-Speed Single-Needle Lockstitch
Automatic Undertrimmer**

INSTRUCTION MANUAL

Thank you for selecting the Mitsubishi Sewing Machine. We are sure you will enjoy its excellent functions. Please read this manual before attempting to operate the machine.

A180E501P01

PRECAUTIONS BEFORE STARTING OPEARTION

(1) Safety Precautions

1. When turning the power on, keep your hands and fingers away from the area around/under the needle and the area around the pulley.
2. Power must be turned off when the machine is not in use, or when the operator leaves his/her seat.
3. Power must be turned off before tilting the machine head, installing or removing the "V" belt, adjusting the machine, or when replacing.
4. Avoid placing fingers, hairs, bars, etc., near the pulley, "V" belt, bobbin winder pulley, or motor when the machine is in operation. Injury could result.
5. Do not insert fingers into the thread take-up cover, under/around the needle, or pulley when the machine is in operation.
6. If a belt cover, finger guard, and/or eye guard are installed, do not operate the machine without these safety devices.

(2) Precautions before Starting Operation

1. If the machine's oil pan has an oil sump, never operate the machine before filling it.
2. If the machine is lubricated by a drop oiler, never operate the machine before lubricating.
3. When a new sewing machine is first turned on, verify the rotational direction of the pulley with the power on.
(The pulley should rotate counterclockwise when viewed from the pulley.)
4. Verify the voltage and (single or three) phase with those given on the machine nameplate.

(3) Precautions for Operating Conditions

1. Avoid using the machine at abnormally high temperature (35°C or higher) or low temperatures (5°C or lower). Otherwise, machine failure may result.
2. Avoid using the machine in dusty conditions.

CONTENTS

Preparation before starting to operate

1	Adjustment of needle bar stop position	1
---	--	---

Precautions for starting to operate

1	Lubrication	2
2	Adjustment of the amount of oil for hook	2
3	Periodical cleaning	3
4	Precaution for position detector	3
5	Installing the belt cover	3

How to use the machine

1	How to attach needle	4
2	Threading	4
3	Adjusting of stitch length & reverse lever	5
4	Adjustment of the thread guide	6
5	Adjusting of pressure of presser foot	6
6	Adjusting the thread tension	6
7	Adjustment of upper thread tension	7
8	Adjustment of lower thread tension	7
9	Thread wiper (for machine equipped with thread wiper)	8
10	How to wind the lower thread on the bobbin	8
11	Adjustment of feed dog height and inclination	9
12	Adjustment of remaining needle thread length after thread trimming	9
13	Adjustment of feed timing	10
14	Adjustment of forward/backward stitch length	10
15	Adjustment of knife engagement	10

Specifications

1	LS2-1380 specifications	12
---	-------------------------------	----

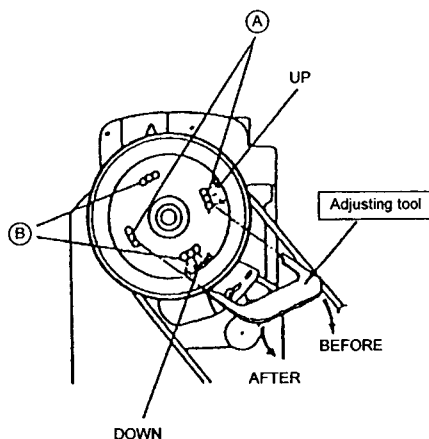
Preparation before starting to operate

1 Adjustment of needle bar stop position

1. Adjust of "UP" position

When the pedal is kicked down by heel, the machine stops at "UP" position. If the marks deviate larger than 3mm adjust as follows.

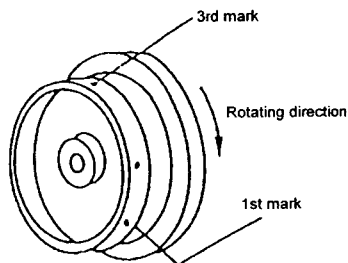
- (1) Disconnect the plug (12 pins) of cable from the machine head.
- (2) Run the machine and stop at "UP" position.
- (3) While holding the pulley insert the "adjusting tool" in the hole (A), then remove the tool.



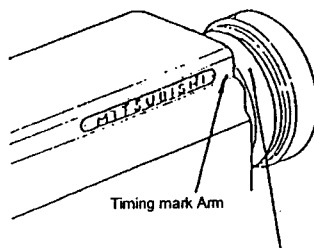
2. Adjust of "DOWN" position

When the pedal is Neutral the machine stops as "DOWN" position. If the marks deviate larger than 3mm adjust as follows.

- (1) Disconnect the plug (12 pins) of cable from the machine head.
- (2) Run the machine and stop at "DOWN" position.
- (3) While holding the pulley insert the "adjusting tool" in the hole (B), then remove the tool.



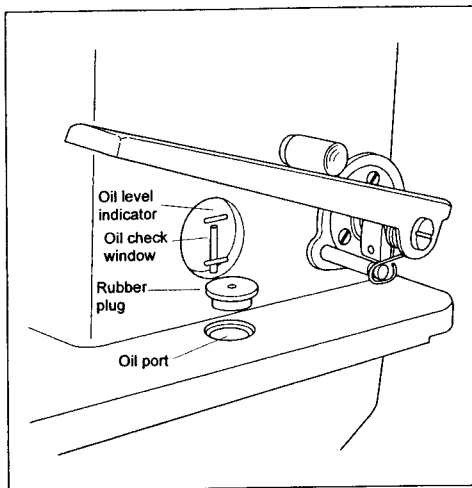
3. Confirm the stop operation then the plug (12 pins) coming from the machine head into the receptacle.



1st mark	"UP" position
3rd mark	"DOWN" position

Precautions for starting to operate

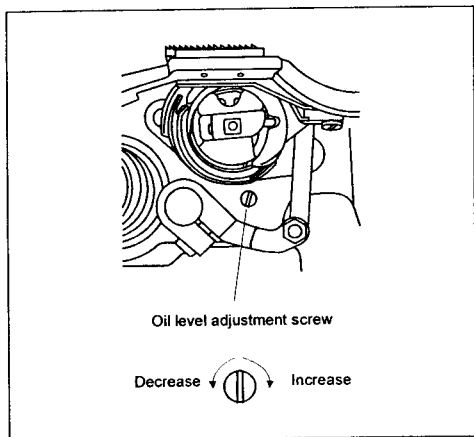
1 Lubrication



Before starting sewing machine operation, fill oil for hook lubrication into the oil tank.

1. Remove the rubber plug from the oil port, and fill the oil from the oil port.
2. Fill in oil until the tip of the oil level indicator matches the line in the oil check window.
3. Use the Mitsubishi-specified "MC70M" for the oil.
4. When done filling the oil, set the rubber plug into the oil port.
5. If the tip of the oil level indicator drops below the line in the oil check window during operation, replenish the oil.

2 Adjustment of the amount of oil for hook

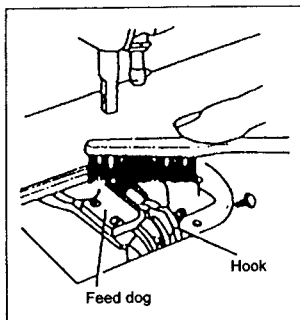


1. Turn the oil level adjustment screw, and adjust the amount of oil for hook.

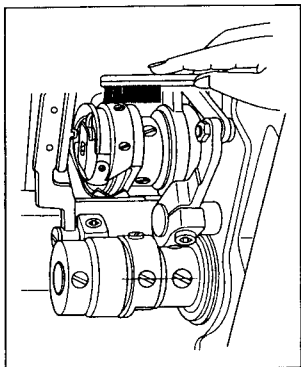
Precautions for starting to operate

3 Periodical cleaning

1. Machine



- 1) Remove the throat plate and clean the feed dog.
- 2) Assembling is to be made by screwing in the screw by 2 to 3 rotations by hand at first, then tightening them evenly by use of a long size screw driver.



- 3) Lay down the machine head and clean the hook and inner bobbin case.

2. Maintenance of motor

Remove dust from the motor filter every one or two month. (If operation is continued with the filter clogged with lint or dust, the motor might overheat.)

3. Control box

Remove dust from the connector (If the connector covered with dust, machine might misoperated.)

4 Precaution for position detector

1. A light type detection element is used in the detector. Thus, take care not to adhere dust or oil on the detector plate when the sewing machine pulley is removed for adjustments, etc. If dust or oil does adhere, wipe off with a soft cloth while taking care not to scratch the detector plate. Do not allow oil to seep into the clearances of the detector plate.
2. If the position detector connector has been disconnected, the belt has been removed, or the machine has locked completely, the motor is automatically switched off in a predetermined period of time to prevent the motor from burning. (The motor may not be switched off if incomplete lock-up or overload has occurred.) The operation is restored to normal by switching the power off, and then on after the fault has been repaired. The above also takes place when the detector has become faulty or any wire has been broken.

5 Installing the belt cover

1. Machine side

Install the belt cover for safety purposes. Refer to the instructions enclosed with the accessories.

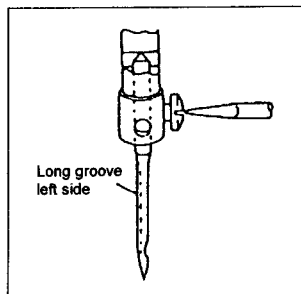
2. Motor side

Install the belt cover for safety purposes.

How to use the machine

1 How to attach needle

Note: Before making the following adjustment, be sure to switch off the power source.



1. Insert the needle up to the bottom of needle clamp and tighten the screw keeping the long groove side of needle forward the left.

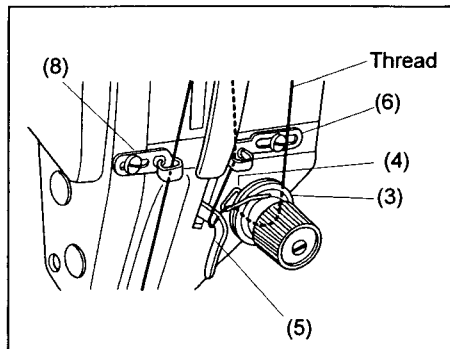
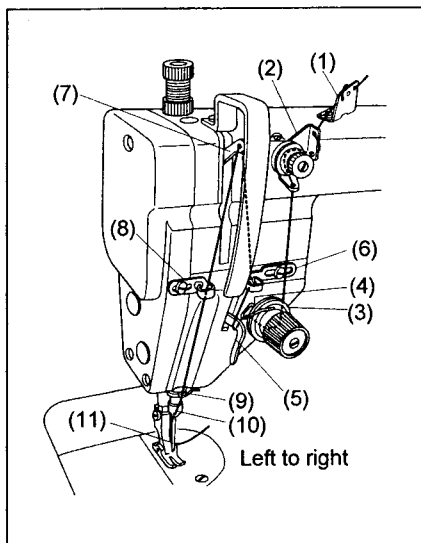
Note: If snapping of thread occurs during back sewing with polyester threads, it may be avoided by fitting the needle with the long groove shifted to the front side.

Use DB × 1 or DA × 1 needle. According to fabric & thread, please choose the size of needle as follows.

Size of Needle	No. of Thread	Fabric
#9	#100 to #80	Extra thin fabric such as de Chin, Georgette, Organdy, etc.
#11	#80 to #60	Thin fabric such as Silk, Calico, Poplin, etc.
#14	#60 to #50	General fabrics such as Cotton, Wooden fabric, etc.
#16	#50 to #30	Thick Calico, Thick wooden fabric, Water proof cloth, thin leather, etc.
#18	#40 to #20	Thick fabric such as Suiting and Coat material, Thin Pouches, Denim, etc.

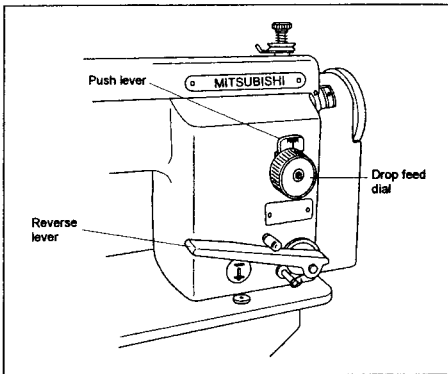
2 Threading

Raise the thread take-up lever to its highest position and thread the upper thread in the following order.

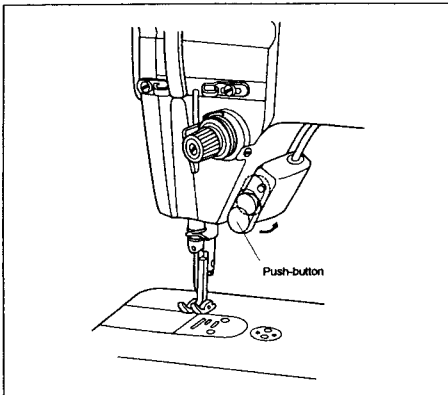


How to use the machine

3 Adjusting of stitch length & reverse lever



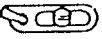
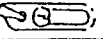
1. Rotate the drop feed dial while depressing the reverse lever and, then, pressing the push lever, when making the stitch length shorter.
2. If the reverse lever is depressed, reverse sewing (backward sewing) will take place.



3. <Touchback switch>
 - 1) With the push-button (touchback switch) pressed lightly during sewing, reverse sewing can be done.
 - (1) Reverse sewing will take place while the push-button is pressed.
 - (2) When the push-button is released, reverse sewing turns into forward sewing.
 - 2) When the push-button is turned 180 degrees in the direction of the arrow, the switch will be locked, and backward sewing will not take place even if the button is pressed.

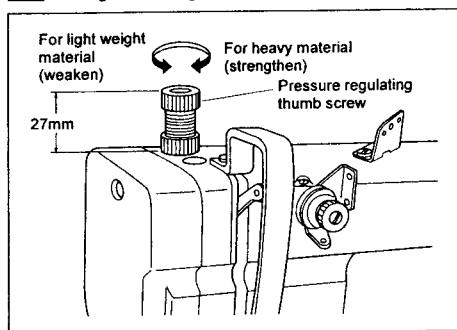
How to use the machine

4 Adjustment of the thread guide

	1	2	3
Thread guide position			
Materials	Heavy	Medium	Light
Thread (Ref.)	Polyester Cotton Vinylon #30 or more	Polyester #50 to 60 Cotton Vinylon #50 to 80	Polyester #50 to 60

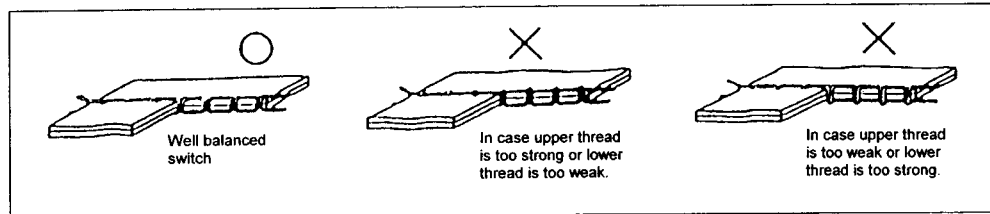
1. Refer to the table on the left, and adjust according to the stitching conditions, the material and thread.

5 Adjusting of pressure of presser foot



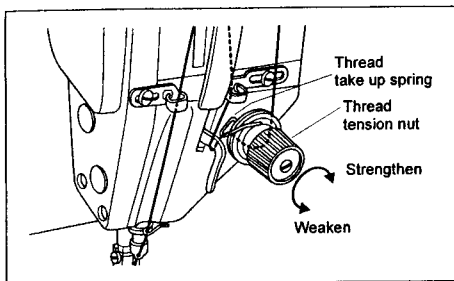
1. Pressure of the presser foot can be adjusted by turning the pressure regulating thumb screw.

6 Adjusting of thread tension



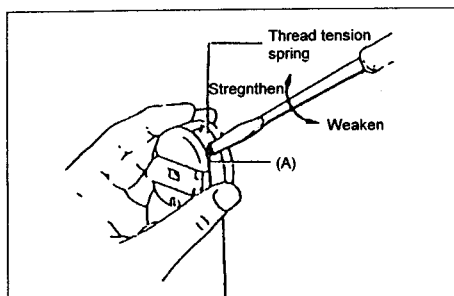
How to use the machine

7 Adjustment of upper thread tension

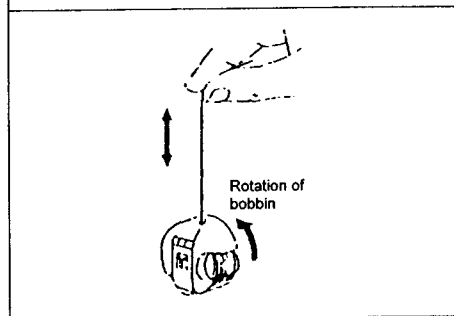


1. Upper thread tension can be adjusted by thread tension nut.
2. Upper thread is to be adjusted according to the lower thread tension.
3. For special fabric sewing with special thread, the desired tension can be obtained by adjusting the strength and operating range of thread take-up spring.

8 Adjustment of lower thread tension



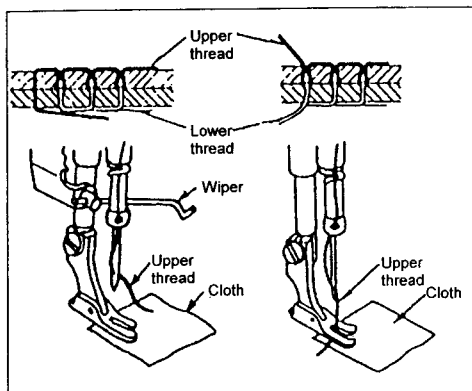
1. Lower thread tension can be adjusted by screw (A).



2. In the case of cotton thread #60, the thread tension can be checked as the following. Hold the end of pulled out thread and if the bobbin case fall slowly, the tension is proper.

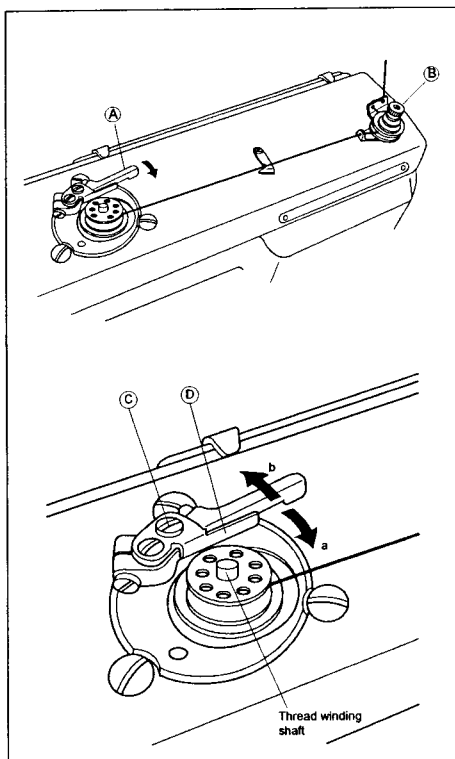
How to use the machine

9 Thread wiper (for machine equipped with thread wiper)



1. When the thread wiper is operated, in next sewing at starting point the end of upper thread does not remain on the surface of fabric.
2. Turn the switch OFF when not required.
The switch is located in the wiper solenoid cover behind the arm.

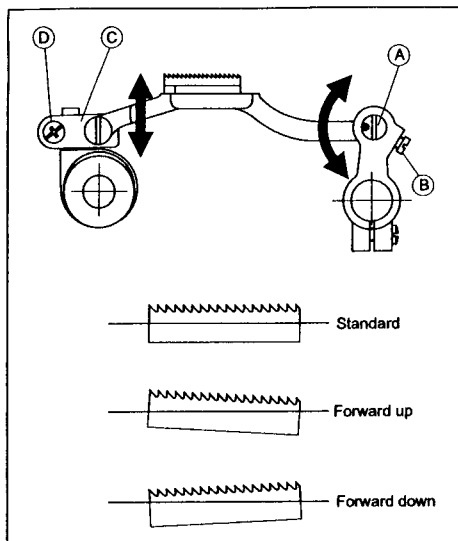
10 How to wind the lower thread on the bobbin



1. Press the bobbin onto the thread winding shaft.
2. Pass the thread for winding thread as shown in the figure, and wind the end of the thread clockwise around the bobbin several times, then wind the thread on the thread adjuster side counterclockwise several times.
3. Press lever (A) in the direction of the arrow, and start the sewing machine.
4. The operation will automatically stop when winding is completed.
5. Adjustment of thread winding strength
 - 1) Adjust with the thread adjuster nut (B).
6. Adjustment of thread winding amount
 - 1) Adjust by loosening screw (C) and moving the adjustment plate (D).
 - (1) The thread winding amount will decrease when moved in the direction of a.
 - (2) The thread winding amount will increase when moved in the direction of b.

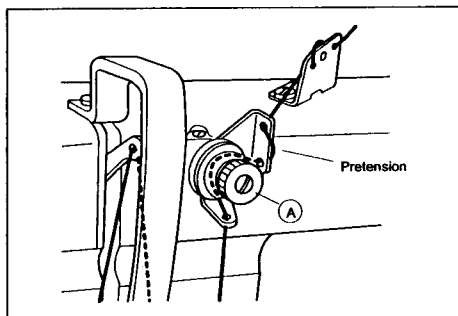
How to use the machine

11 Adjustment of feed dog height and inclination



1. As a standard, the eccentric shaft (A) mark on the left of the horizontal feed arm is set to the direct left side, and the feed dog height is set to 0.8mm (maximum) as shown in the figure.
2. To adjust the feed dog height and inclination, loosen the screw (B) at the left of the horizontal feed arm, and turn the eccentric shaft (A), or loosen the screw (D) on joint (C), and move the joint (C) up and down.
3. When the eccentric shaft is set to "DOWN" position, puckering may be avoided and free loop is less like to occur.
4. When the eccentric shaft is set to "UP" position, misalignment of fabrics is less likely to occur and yarn severance may be avoided.

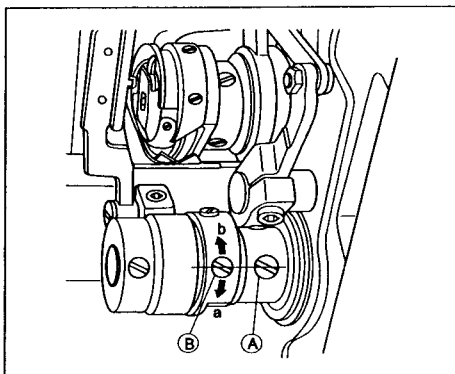
12 Adjustment of remaining needle thread length after thread trimming



1. Turn the pretension nut (A) and adjust.
2. When turned clockwise, the length of thread left in the needle will be short.
3. When turned counterclockwise, the length of the thread left in the needle will be long.

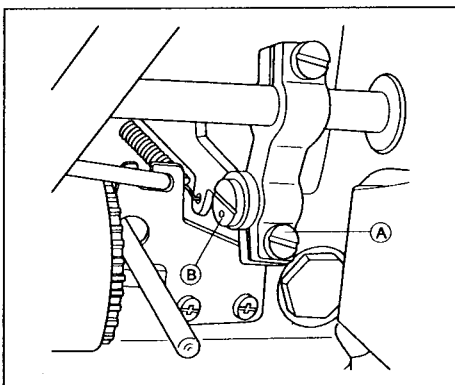
How to use the machine

13 Adjustment of feed timing



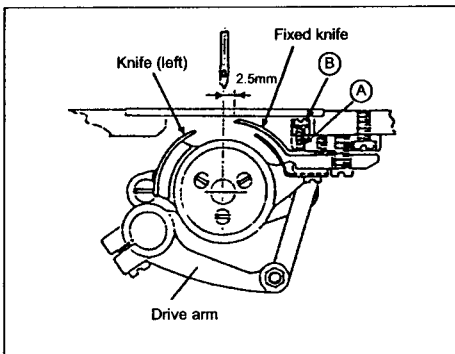
1. Adjust by changing the position of the vertical feed eccentric ring.
2. As a standard, the vertical feed timing is set to when the screw (A) on the bearing bushing is linear with screw (B) on the vertical feed eccentric ring.
3. When the eccentric ring is moved in the direction of a, the vertical feed dog will rise earlier.
4. When the eccentric ring is moved in the direction of b, the vertical feed dog will rise later.

14 Adjustment of forward/backward stitch length



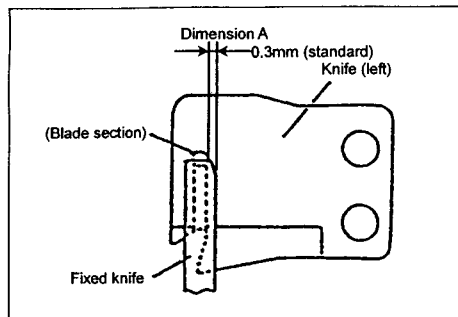
1. Loosen screw (A) on the right of the adjustment arm.
2. Turn the eccentric shaft (B) and adjust.
3. The forward stitch length will increase and the backward length will decrease when the eccentric shaft (B) is turned counterclockwise.
4. The forward stitch length will decrease and the backward length will increase when the eccentric shaft (B) is turned clockwise.

15 Adjustment of knife engagement

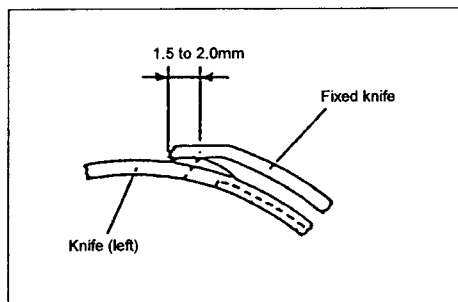


1. Position of fixed knife
 - 1) As a standard, the dimension between the fixed knife's end and the needle center is 2.5mm.

How to use the machine

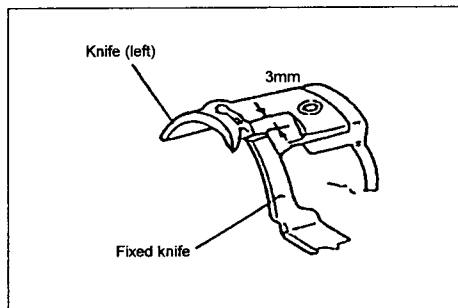


- 2) The standard relation of the knife (left) and fixed knife is shown in the figure. As a standard, Dimension A is 0.3mm.
- 3) When Dimension A is too large, the three piece of threads will be cut, and can cause the needle thread to come out from needle after trimming. If too small, the thread may not be trimmed correctly.
- 4) Adjust by adjusting the installation of the fixed knife.



2. Knife engagement amount

- 1) When the sewing machine is rotated while the solenoid is activated, the knife (left) will be rotated by the thread trimming cam. As a standard, the knife engagement amount should be 1.5 to 2.0mm when the knife (left) moves the most.
- 2) Adjust by adjusting the installation of the drive arm.



3. Adjustment of knife engagement pressure

- 1) As a standard, the knife (left) and fixed knife should start contacting at the position shown in the figure.
- 2) To adjust the engagement pressure, loosen the lock nut (B) and then adjust the adjustment screw (A).

Specifications

1 LS2-1380 specifications

		LS2-1380-MIT	LS2-1380-MITW
Material weight		Light to medium	
Max. speed		5,000rpm	
Stitch length		0 to 4mm	
Needle bar stroke		31.8mm	
Presser foot clearance	Hand lifter	6mm	
	Knee lifter	13mm	
Needle type		DB×1 #14	
Hook (for thread trimming)		Full rotation automatic lubrication (standard)	
Bobbin case		With spring for dry run prevention	
Bobbin		Steel for thread trimmer	
Thread trimming method		Left knife rotating, right knife fixed engagement type	
Oil lubrication method		Automatic lubrication (slightly lubricate to hook and needle bar.)	
Touch back unit		○	○
Thread wiper		—	○
Bed dimensions		475 × 178mm	

- (Note)**
- Always use a hook and bobbin case dedicated for the thread trimmer.
 - Use a high quality bobbin that will not deform.

After-sales service

If any trouble or faults occur, contact the place of purchase or your dealer's sewing machine department.



MITSUBISHI ELECTRIC CORPORATION

FACTORY AUTOMATION SYSTEM

OFFICE TOWER "Z" 14F 8-12 1 chome, Harumi CHUO-KU, TOKYO 104-6212, JAPAN

Phone: +81-3-6221-6060

Fax: +81-3-6221-6076