

1. SPECIFICATIONS

MB-373

1	Sewing speed	Max. 1,500 rpm Normal speed 1,300 rpm
2	Number of stitches	8, 16, and 32 stitches (6, 12 and 24 stitches are also possible by changing the cam.)
3	Amount of feed	Crosswise feed 2.5 to 6.5 mm Lengthwise feed 0, 2.5 to 6.5 mm
4	Stitching pattern	□ -shape, Z-shape, -shape, and X-shape
5	Button size	10 to 28 ø mm
6	Needle bar stroke	48.6 mm
7	Needle	TQ x 7 #16 (#14 to #20)
8	Automatic thread trimmer	Interlocked with the presser lifter. Consists of a fixed knife and a moving knife.
9	Presser lifter	Automatically operated (Pedal-system is also available.)
10	Stop-motion unit	Automatically operated (equipped with speed slowing device)
11	Power supply	200 W (1/4 HP) single- or three-phase

MB-377

1	Stitching pattern	□ -shape, Z-shape, and X-shape
2	Needle	TQ x 1 #16 (In case of attachments for medium button (Z202) and large button (Z201) TQ x 7 #16, #14 to #20)

Other specifications are same as those of MB-373.

2. STANDARD ADJUSTMENT

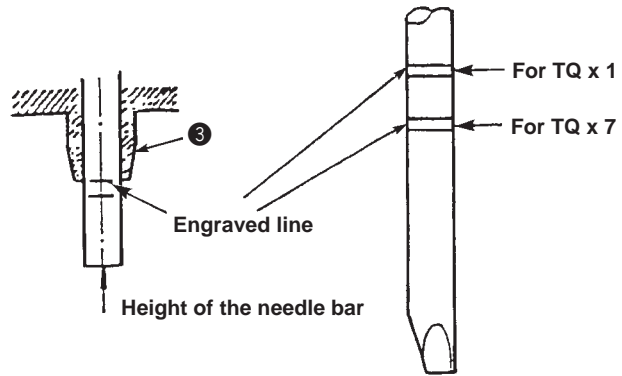
Standard Adjustment

(1) Height of the needle bar

The upper engraved line should be aligned with the bottom of lower bushing ③ when the needle bar is at its lowest position.

Standard needle for MB-373 : TQ x 7

Standard needle for MB-377 : TQ x 1

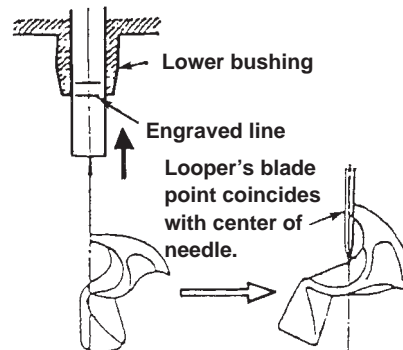


(2) Positioning the needle and the looper

1) Looper timing

When the needle bar is ascending from its lowest position and the lower engraved line on the needle bar is aligned with the bottom of the lower bushing, the looper's blade point should coincide with the center of the needle. (When the needle bar is ascending.)

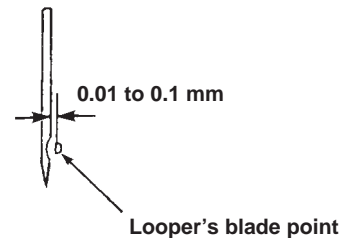
Looper timing



2) Clearance between the needle and looper

The clearance is 0.01 to 0.1 mm when the looper's blade point coincides with the center of the needle.

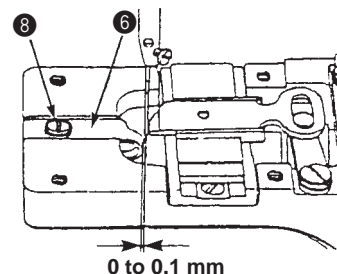
Clearance between needle and looper



Clearance between needle and looper

3) Clearance between the needle guide and needle

The clearance between needle guide ⑥ and needle is 0 to 0.1 mm when the needle bar is at its lowest position.



Adjustment Procedures

- Turn the hand wheel by hand and loosen screw ① in the Fig. A in the thread take-up lever to adjust so that the upper engraved line of the two engraved lines on the needle bar aligns with the bottom of lower bushing ③ when the needle bar is at its lowest position.

For the old type sewing machine, in addition, adjust the position so that needle clamp screw ④ enters the slot of lower bushing ③ as illustrated in Fig. B when the needle bar is at its highest position.

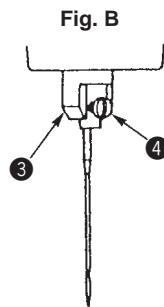
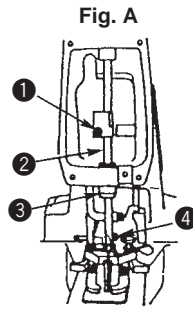
Following needles are equipped at the time of delivery.

MB-373 : Standard needle TQ x 7 #16

MB-377 : Standard needle TQ x 1 #16

MB-377 / Z201 : TQ x 7 #20

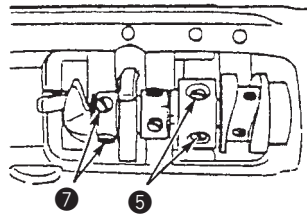
MB-377 / Z202 : TQ x 7 #18



Results of Improper Adjustment

- If needle bar ② is too high, skipped stitches will be produced.
If the needle bar is too low, the needle will come in contact with the looper.

1) Adjusting the looper timing



- Loosen two screws ⑤ in the looper and cam sleeve and adjust in the rotating direction of the looper and cam sleeve so that the looper's blade point aligns with the center of the needle when the lower engraved line of the needle bar is aligned with the bottom of the lower bushing. Then tighten the screws.
- 2) Clearance between the needle and looper
Loosen two screws ⑦ in the looper support ring and adjust in the longitudinal position of the looper when the looper's blade point is aligned with the center of the needle. Then tighten the screws.
- 3) Clearance between the needle guide and needle
Loosen screw ⑧ in the needle guide and adjust in the longitudinal position of the needle guide so that the clearance between needle guide ⑥ and needle should become 0 to 0.1 mm when the needle bar is at its lowest position.

- If the clearance between the needle and looper is too excessive, it is likely to produce skipped stitches. If the clearance is too small, in accordance with the material used, the needle will come in contact with the looper resulting in needle breakage and looper's blade point breakage.
- For thick materials and overlapped sections, adjust the clearance between the needle guide and needle so that the needle guide touches the needle by 0.1 to 0.2 mm.

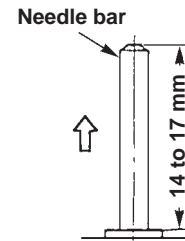
Standard Adjustment

(3) Timing the travel of the yoke slide

1) Crosswise travel timing of the yoke slide

The height of the ascending needle bar when the yoke slide advances and begins to travel from the left to right is as shown in the table below.

Model	Thread	Needle	Needle bar height
MB-373	Cotton #50	TQ x 7	14 to 17 mm
	Tetoron #20	TQ x 7	14 to 18 mm
MB-377		TQ x 1	4 to 8 mm
		TQ x 7	14 to 18 mm

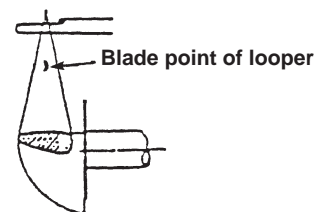


2) Lengthwise travel timing of the yoke slide

The yoke slide begins to go back immediately after the blade point of the looper has passed the thread triangle. And, it is good for the looper to go back like a slant line of the movement of the triangle.

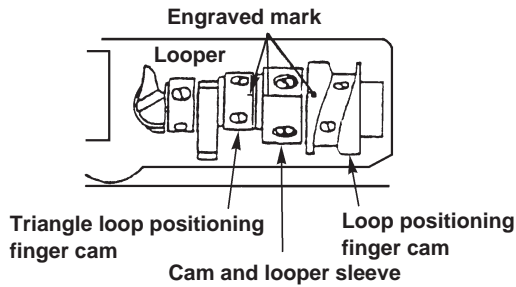
3) Lengthwise positioning of the yoke slide

Position the yoke slide so that the blade point of the looper passes through the center of the thread triangle. (Use a 4-hole button, 9 or 10 stitches for positioning.)



Adjustment Procedures

- For adjusting the timing of the travel of the yoke slide, align the engraved marks of the loop positioning finger cam and the triangle loop positioning finger cam with the engraved mark of the cam and looper sleeve after the adjustment of the looper so that the engraved marks are on a straight line. Then temporarily tighten the screws.



- 1) Adjust the crosswise travel timing of the yoke slide in the rotational direction of the triangle loop positioning finger cam. When the timing is higher than 58 mm (48 mm), adjust the timing in the rotational direction of the cam, and when it is lower than 53 mm (43 mm), adjust the timing in the reverse rotational direction of the cam. The center of the cam is aligned with the center of the positioning finger yoke slide in the longitudinal position of the cam.
- 2) Adjust the lengthwise travel timing of the yoke slide in the rotational direction of the loop positioning finger cam. For the triangle movement of the yoke slide, it is good for the yoke slide to go back like a slant line. When the yoke slide goes back like a swollen line, adjust the cam in the reverse rotational direction, and when it goes back like a hollow line inside, adjust the cam in the rotational direction.
- 3) Adjust the longitudinal position of the yoke slide by moving the loop positioning finger cam in the lengthwise direction.

Results of Improper Adjustment

- If the triangle loop positioning finger cam begins to travel too late, thread breakage, thread remaining, balloon stitch, and insufficient tightness of stitches will result. On the contrary, if it begins to move too early, the needle will come in contact with the yoke slide.
- If the loop positioning finger cam begins to go back too early, the retreat of the yoke slide will become like a swollen line and the looper will hook the thread twice.



Yoke slide retreats like a swollen line.

- On the other hand, if it begins to retreat too late, its retreat will become like a hollow line and the needle will come in contact with the yoke slide.



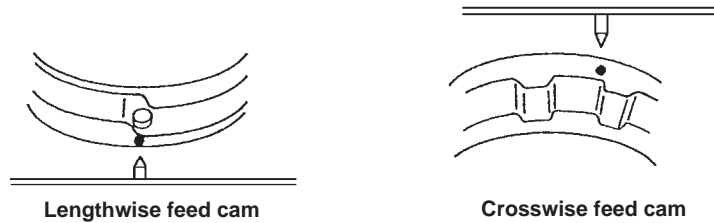
Yoke slide retreats like a hollow line.

- If the longitudinal position of the yoke slide is improper, the looper will hook the thread twice or the needle will come in contact with the yoke slide.

Standard Adjustment

(4) Positioning the cloth feed cam

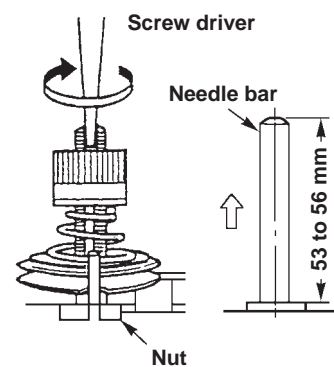
The engraved point of the outer circumference of the cloth feed cam should be aligned with the pivot fixed on the bed at the time of stop motion.



(5) The floating timing of the tension disc No. 2

The height of the ascending needle bar at the time of the floating timing of the tension disc No. 2 is as shown in the table below.

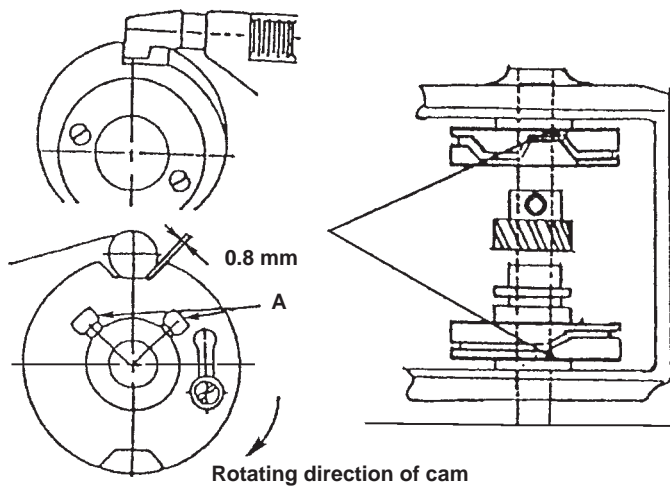
Model	Thread	Needle	Needle bar height
MB-373	Cotton #50	TQ x 7	53 to 56 mm
	Tetoron #20	TQ x 7	54 to 57 mm
MB-377		TQ x 1	44 to 47 mm
		TQ x 7	54 to 57 mm



Adjustment Procedures

- Align the engraved point on the cam with the pivot on the bed at the position of stop motion. Then, tighten the setscrew of cam.

After the adjustment, turn the stop motion pulley by hand and confirm that the button clamp stops at the distance of about 13 mm between the top of needle and the top surface of throat plate when the needle bar descends by means of crosswise feed.



Results of Improper Adjustment

- If the lengthwise feed cam and crosswise feed cam do not engage each other, the needle moves in the material used.

- For MB-377

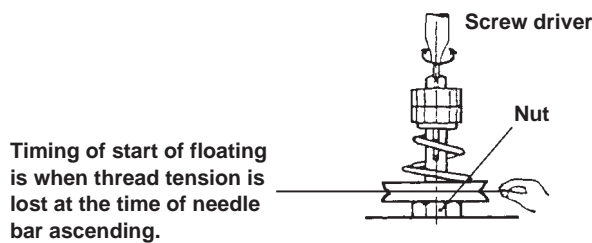
If the position of engraved point is not proper, the needle entry will vary and be not likely to drop in the same point.

Thread is likely to be frayed.

If the position of engraved point is moved to the rotating direction of the cam, the needle is likely to move in the material used when the needle comes out of the material.

If the position of engraved point is moved to the opposite direction, the button clamp will be likely to continue working until the needle enters into the material.

- Loosen the adjusting nut of the tension post No. 2, insert a screwdriver into the tension post No. 2, and turn the tension post No. 2 as shown in the figure below to make adjustment. The timing of the start of floating is when the thread tension is lost after passing the thread through the thread tension No. 2, holding it with fingers and turning the machine by hand.



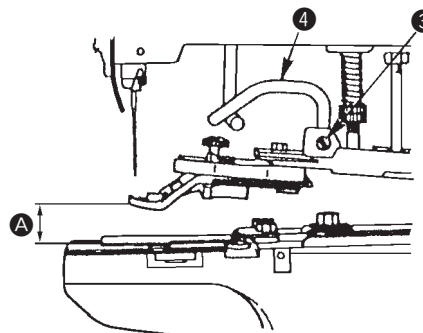
- If the thread tension is released too early, thread remaining and/or poor tightness of stitches will result. On the other hand, if the timing of thread tension release is too late, thread will break.

Standard Adjustment

(6) Lift and pressure of the button clamp

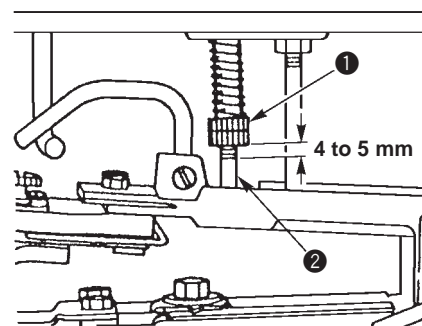
1) Lift of the button clamp

- Ⓐ MB-372 : 12 mm
- MB-373 : 9 mm
- MB-377 : 8 mm for □-shape
- 8 mm for Z -shape
- 10 mm for X -shape



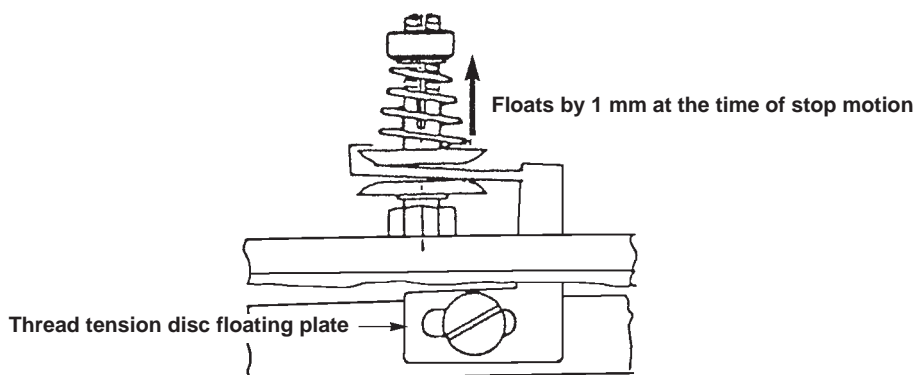
2) Pressure of the button clamp

Adjust the position of pressure adjusting nut ① to 4 to 5 mm from the lower side of the screw section of pressure adjusting bar ②.



(7) Thread tension disc No.1

Adjust so that the thread tension disc No.1 floats by 1 mm at the time of stop motion.
Also, the thread tension should move during the sewing operation.



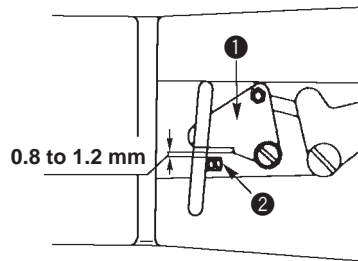
Adjustment Procedures	Results of Improper Adjustment
<p>1) The knife moves in accordance with the lifting of the button clamp. Therefore, the length of the remaining thread on the wrong side of a fabric depends upon the height of the button clamp at which the thread is trimmed. (In case of MB-373/377)</p> <p>For MB-372, the lifting amount of the button clamp is higher as the button clamp cuts by its lifting force the thread lying on the looper when the button clamp ascends at the time of stop motion.</p> <p>Loosen hook setscrew ③ and move hook ④ up or down for adjustment.</p> <p>2) Make adjustment by turning pressure adjusting nut ①.</p>	<ul style="list-style-type: none"> ○ Increasing the lifting amount of the button clamp will increase the length of the remaining thread. Especially in case of MB-372, thread tightness becomes strong at the end of sewing resulting in thread breakage and thread slip-off. ○ If the lifting amount of the button clamp is too low, the length of the remaining thread will become short resulting in thread slip-off. ○ If the pressure of the button clamp is too low, the thread end at the start of sewing will come out on the wrong side of the fabric unevenly by 10 to 20 mm.
<ul style="list-style-type: none"> ○ Make adjustment so that the thread tension disc floats at the time of stop motion by moving back and forth the thread tension disc floating plate. <p>If the position is not proper, the disc will be likely to float during the sewing operation.</p>	<ul style="list-style-type: none"> ○ If the floating amount is too high, the thread tension disc keeps floating during sewing operation resulting in insufficient button stitching. ○ If the floating amount is too low, the thread length at the start of sewing will become short resulting in thread slip-off.

Standard Adjustment

(8) Positioning the thread nipper

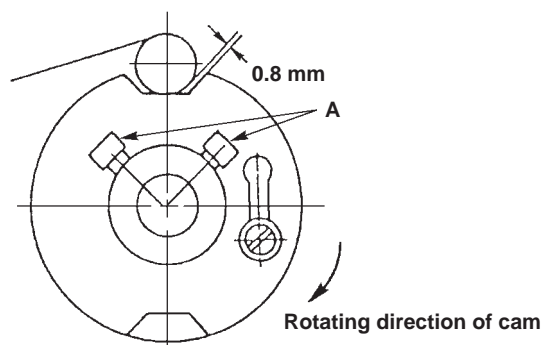
The clearance between thread nipper ① and nipper block ② should be 0.8 to 1.2 mm while the machine is in operation.

(In case of MB-377 : 0.4 to 0.8 mm)



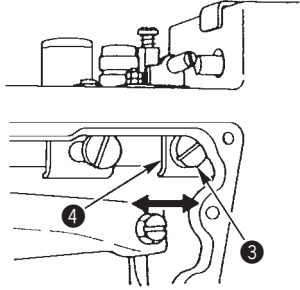
(9) Positioning the stitch adjusting cam

The clearance between the roller and the recess of the cam should be 0.8 mm at the stop-motion position.



Adjustment Procedures

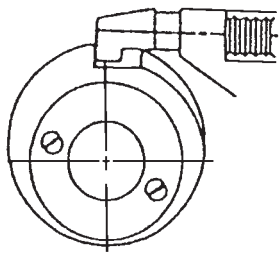
- Remove the machine arm side cover (left), loosen the screw of nipper bar block ③ and move nipper bar block ④ to the right or left to perform adjustment.



Results of Improper Adjustment

- If the clearance is too large, the thread from the needle will become too short.
- If the clearance is too small, some kinds of thread will be broken.

- Loosen the stitch adjusting cam screw A, and turn the cam in the rotational direction to make adjustment.



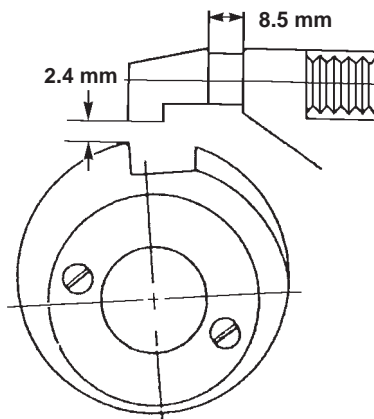
Stop-motion position

- If the impact at the time of the stop motion is too great, increase the clearance, and if the cam stops before it reaches the stop-motion position, decrease the clearance.

Standard Adjustment

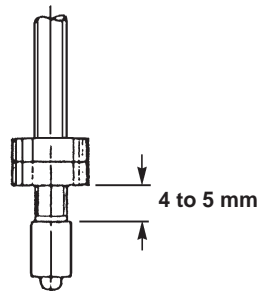
(10) Positioning the stop motion disc and the stop motion plunger

- 1) The clearance between the stop motion disc and the stop motion plunger should be 2.4 mm while the machine is in operation or at the position of 3 to 4 stitches from the position of stop-motion.
- 2) The clearance between the stop motion plunger lever and the stop motion plunger should be 8.5 mm.



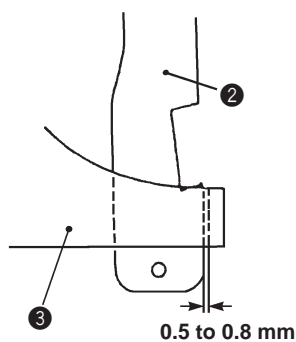
(11) Pressure of the button clamp

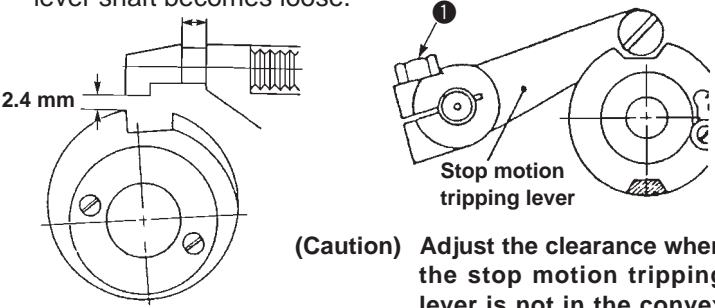
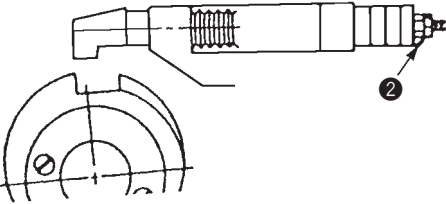
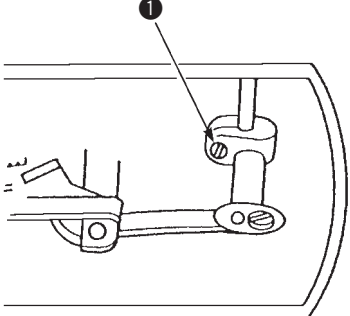
A distance of 4 to 5 mm should be provided from the bottom of the pressure adjusting nut.



(12) Positioning the button clamp lifting link

The clearance between button clamp lifting link ② and button clamp forked rod ③ should be 0.5 to 0.8 mm while the machine is in operation.

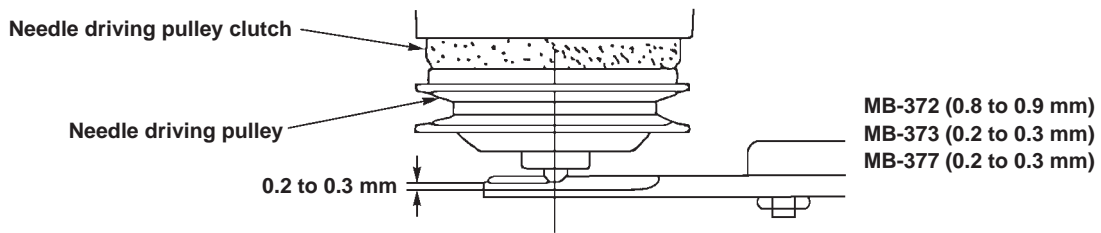


Adjustment Procedures	Results of Improper Adjustment
<p>1) Perform adjustment to provide the 2.4 mm clearance after loosening screw ❶ of the stop motion tripping lever. Remove the stop motion disc pressure lever and the needle driving pulley, insert a 2.4 mm gauge or a 3 mm wrench between the stop motion plunger and the stop motion disc, and tighten screw ❶ of the stop motion tripping lever since the stop motion lever shaft becomes loose.</p>  <p>Adjust with a 2.4 mm gauge or a 3 mm wrench.</p> <p>(Caution) Adjust the clearance when the stop motion tripping lever is not in the convex section of the stop motion cam.</p> <p>2) Perform adjustment to provide the 8.5 mm clearance by the stop motion adjusting nut ❷.</p> 	<ul style="list-style-type: none"> ○ If the clearance is larger than 2.4 mm, unstable entrance into the stop-motion state will result. On the contrary, if the clearance is smaller than 2.4 mm, the stop motion disc may come in contact with the stop motion plunger during operation, or the machine may not start. ○ If the clearance is larger than 8.5 mm, the shock noise of the stop motion is high or the stop motion plunger comes off. On the contrary, if the clearance is smaller than 8.5 mm, the position of the stop motion disc becomes unstable at the time of stop motion.
<ul style="list-style-type: none"> ○ Make adjustment by turning the pressure adjusting nut. 	<ul style="list-style-type: none"> ○ Insufficient pressure will cause the attached button to trail a 10 to 20 mm thread end of the beginning stitch on the wrong side of the fabric.
<ul style="list-style-type: none"> ○ Make adjustment by loosening screw ❶ of the button clamp lifting link lever. 	<ul style="list-style-type: none"> ○ If the clearance is too large, the button clamp will not lift at the time of stop-motion. If the clearance is too small, the button clamp lifting link may come in contact with the button clamp forked rod during operation resulting in producing abnormal noise.

Standard Adjustment

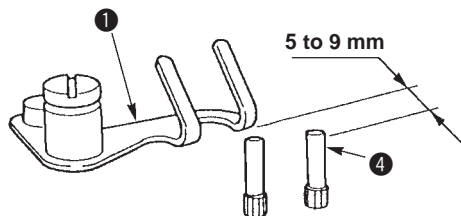
(13) Positioning the needle driving pulley pressure applying lever

The clearance at the stop-motion position (while the driving pulley is running idle) should be 0.2 to 0.3 mm.



(14) Positioning the thread pull-off lever

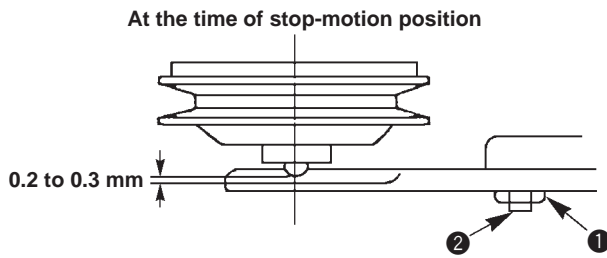
Adjust the position of thread pull-off lever ❶ so that the dimension between thread guide pole ❷ and thread pull-off lever ❶ is 5 to 9 mm at the stop-motion position.



Adjustment Procedures

- Loosen nut ① of the screw of the needle driving pulley pressure applying lever and adjust by screwing in and out screw ②.

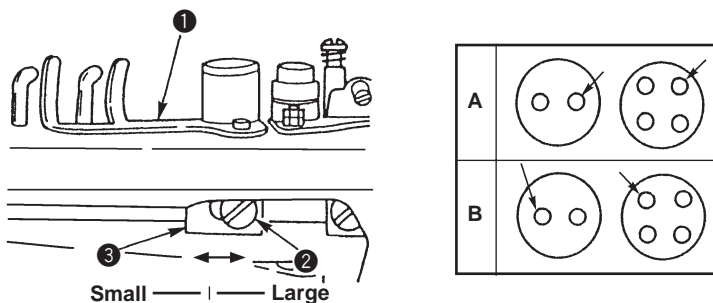
The clearance will become larger by screwing it in.



Results of Improper Adjustment

- If the clearance is too large, the clutch will slip causing starting difficulty.
- If the clearance is too small, the starting pedal will become heavy.

- Perform adjustment by loosening screw ② of the nipper bar block (rear) and moving nipper bar block (rear) ③ to the right or left.



- If the amount of movement of the nipper bar block (rear) is too large, at the beginning of stitching, the thread will come out of the upper side of the fabric. Or, the thread will remain on the wrong side of the fabric at second stitching.
- If its amount is too small, the thread will slip off or come out of the upper side of the fabric at second stitching.
- Also, if its amount is too large, thread pull-off lever ① will come in contact with thread guide pole ④ where the thread will break.
- If the end of thread is drawn from the arrow hole A in the button after sewing, move nipper bar block (rear) ③ to the left. And, move it to the right when the thread end comes out from the arrow hole B so that the end of thread should not come out.

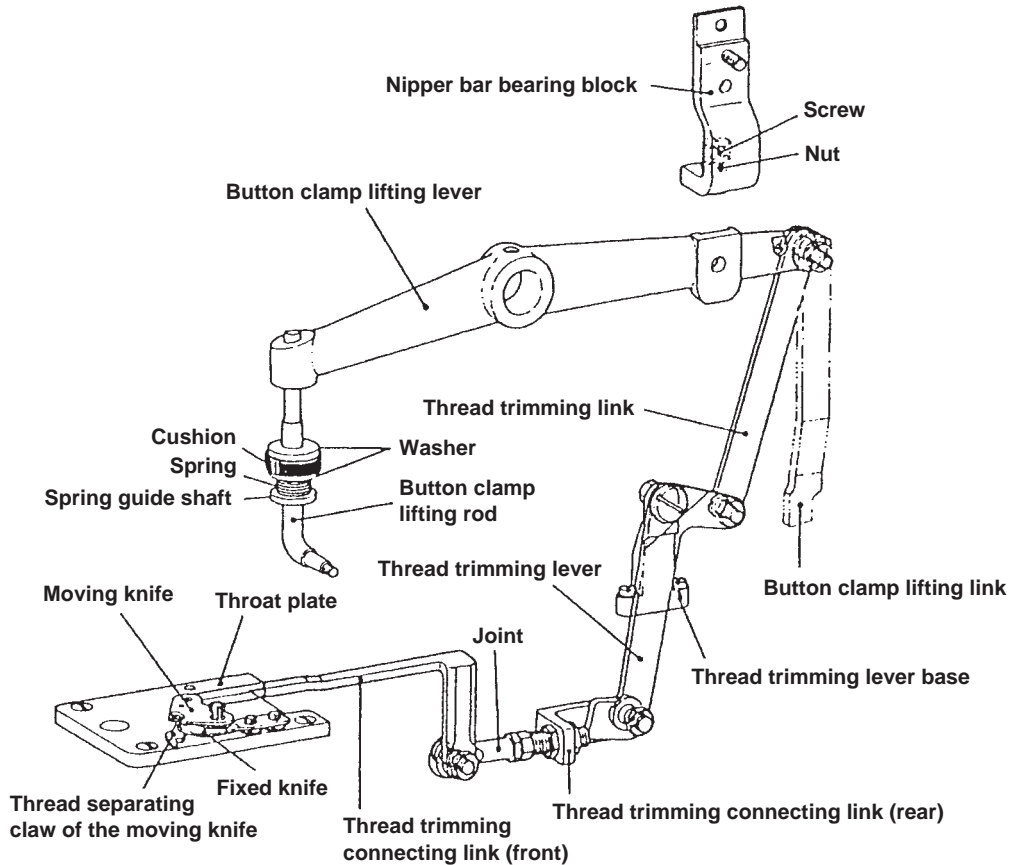
3. ADJUSTMENT OF AUTOMATIC THREAD TRIMMER

Standard Adjustment

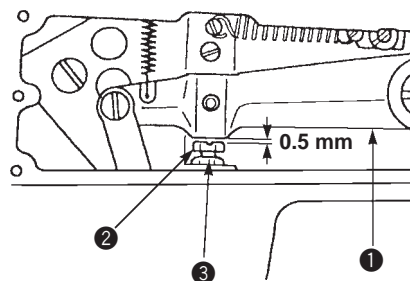
(1) The mechanism and the name of each component of the thread trimmer

As shown in the figure below, when the button clamp lifting lever is actuated at the final stitch, the thread trimming connecting link (rear) moves forward, causing the thread separating claw of the moving knife to separate thread before it is trimmed by the knife.

Unlike MB-372, the stop-motion timing is delayed so that thread is trimmed after a stitch is tightened by the thread take-up lever, eliminating the possibility of broken stitches.



(2) Clearance between the button clamp lifting lever and the adjusting screw

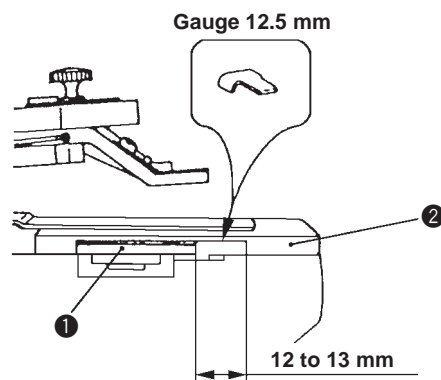


Adjustment Procedures	Results of Improper Adjustment
<ul style="list-style-type: none">○ Perform adjustment so that the clearance between the end surface of button clamp lifting lever ❶ and the adjusting screw ❷ becomes 0.5 mm. Then tighten nut ❸.	

Standard Adjustment

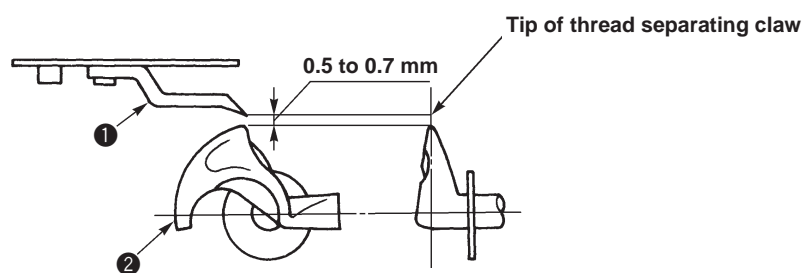
(3) Adjusting the position of the moving knife

Adjust the position so that the distance between thread trimming connecting link (front) ① and the edge of the slot in throat plate ② should be 12 to 13 mm when the button clamp is at its highest position after the stop motion has been set. (For MB-377 : 10.5 to 12.5 mm) (For MB-373-11 only, adjust the distance to 15 to 16 mm.)

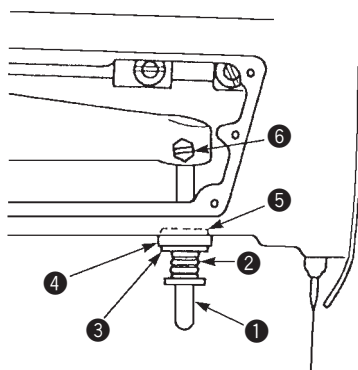


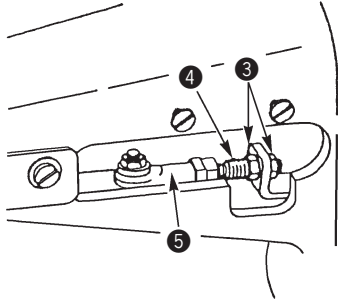
(4) Adjusting the height of the thread separating claw of the moving knife

Make adjustment so that the clearance between thread separating claw ① and looper ② should become 0.5 to 0.7 mm.



(5) Installing the button clamp lifting rod



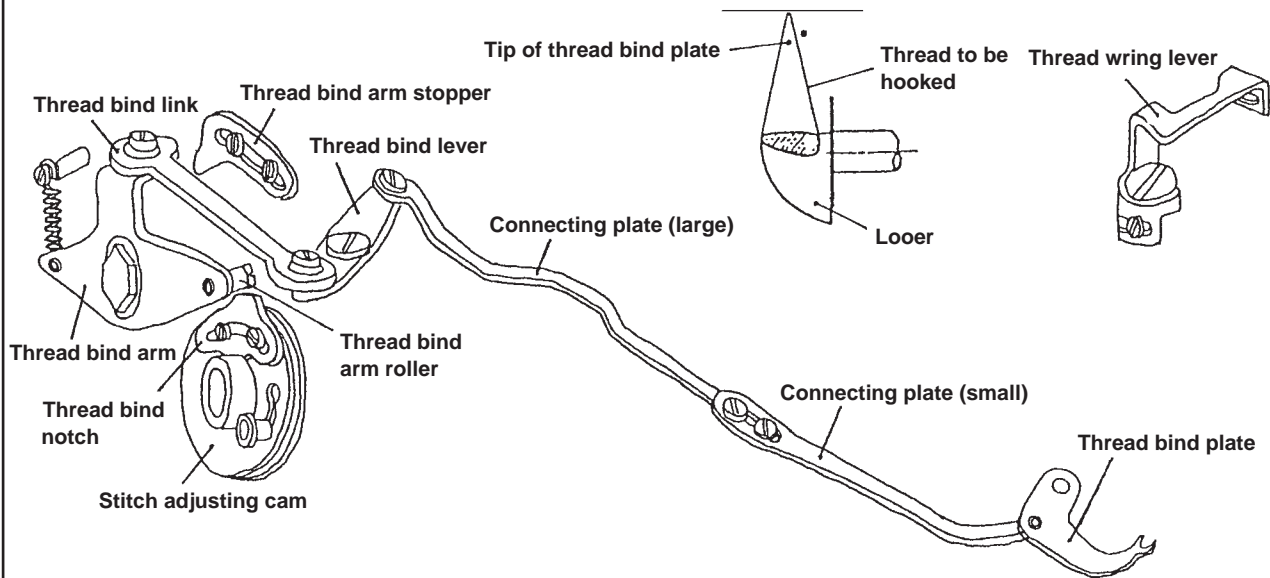
Adjustment Procedures	Results of Improper Adjustment
<ul style="list-style-type: none"> ○ Make adjustment after tilting the machine head by loosening two nuts ③ and moving connecting screw ④ back and forth. Loosen nuts ③ so that thread trimming connecting joint ⑤ becomes almost horizontal.  <ul style="list-style-type: none"> ○ If the above distance is too large, the timing of the thread trimming will be delayed, and excessively long thread will remain on the wrong side of a fabric. On the contrary, if the distance is too small, thread will be trimmed too early, often resulting in poor tightness of the final stitch (easy break), trimming two threads together due to failure of thread separation, or failure to trim thread. 	<ul style="list-style-type: none"> ○ If the adjustment value is small (10 mm or less), the thread separating claw will come in contact with the counter knife or the yoke slide insert due to overrunning of the moving knife at the time of stop motion resulting in breakage of the thread separating claw. ○ If the adjustment value is large (15 mm or more), the thread separating claw will come in contact with the yoke slide insert during machine running resulting in breakage of the thread separating claw. <p>(Caution) The thread trimming connecting mechanism is reset by the pressure springs of the button clamp jaw levers. Accordingly, the thread trimming connecting mechanism may not be reset when the pressure springs are disengaged. Do not operate the machine when making adjustment with the pressure springs disengaged.</p>
<ul style="list-style-type: none"> ○ Make adjustment by bending thread separating claw ①. 	<ul style="list-style-type: none"> ○ If the thread separating claw is too high, the claw may fail to separate the thread on the needle from that on a fabric. As a result, thread may not be trimmed, or the both threads are trimmed together, causing thread slippage from the needle in the subsequent stitching start.
<ul style="list-style-type: none"> ○ Install button clamp lifting rod ①, spring ②, washer ③, cushion ④, and washer ⑤ in the numerical sequence as shown in the figure on the previous page. ○ After confirming that the stop motion is set fully, bring the jaw of the machine arm to a close contact with the top surface of washer ⑤, leaving no play. Then, firmly tighten screw ⑥. 	

4. ADJUSTMENT OF KNOT-TYING MECHANISM (EXCLUSIVE FOR MB-377)

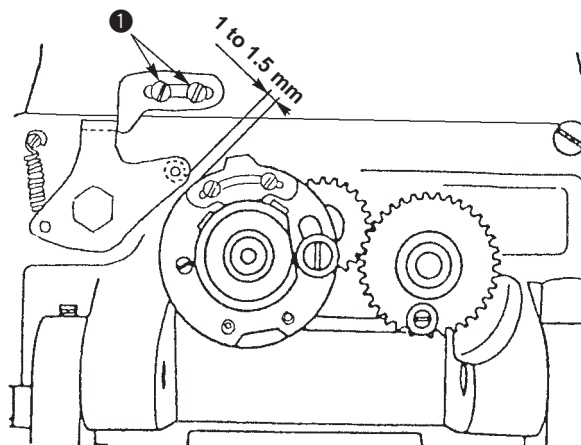
Standard Adjustment

(1) The mechanism and the name of each component of the knot-tying

As shown in the figure below, when the machine is running, the stitch adjusting cam rotates and the thread bind arm roller rides over the thread bind notch attached to the stitch adjusting cam making the thread bind plate actuate by means of the respective links to hook thread. The slack portion of the hooked thread will be tightened by the thread wring lever at the time of stop motion.



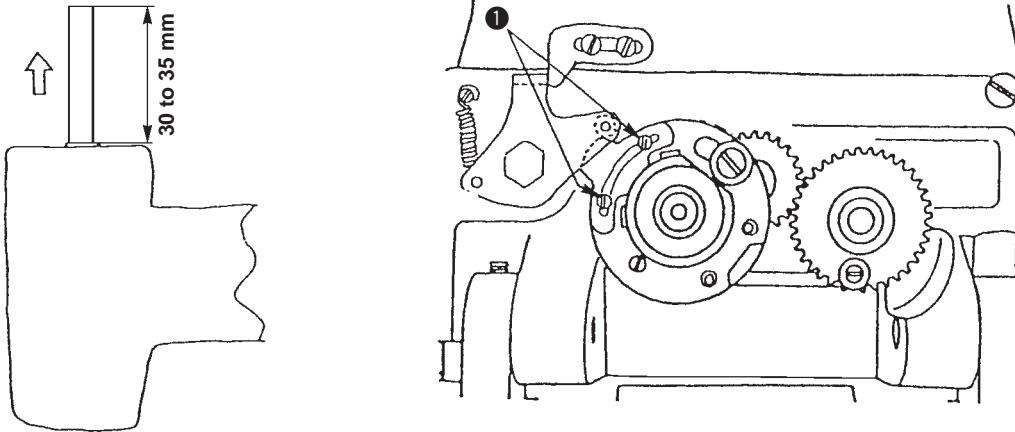
(2) Positioning the knot-tying arm stopper



Adjustment Procedures	Results of Improper Adjustment
<ul style="list-style-type: none"> ○ Loosen screw ❶ and adjust so that the clearance between the outside periphery of the roller of the knot-tying arm and that of the stitch adjusting cam should be 1 to 1.5 mm at the time of stop-motion. 	<ul style="list-style-type: none"> ○ If the clearance is too large, the stroke of the thread bind plate will become short. ○ If the clearance is too small, the roller may come in contact with the outside periphery of the cam, or the thread bind plate may come in contact with the throat plate.

Standard Adjustment

(3) Positioning the knot-tying notch

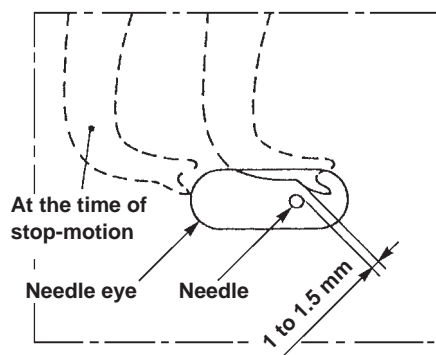


(When the needle TQ x 7 is used : 40 to 45 mm)

(4) Adjusting the thread bind plate (Exclusive for MB-377)

A clearance of 1 to 1.5 mm should be provided between the needle and the thread bind plate when the roller of the thread bind arm rides on the outmost periphery of the thread bind notch.

(After the adjustment, ascertain that the tip of the thread bind plate is almost aligned with the outside periphery of the needle eye at the time of stop-motion.)



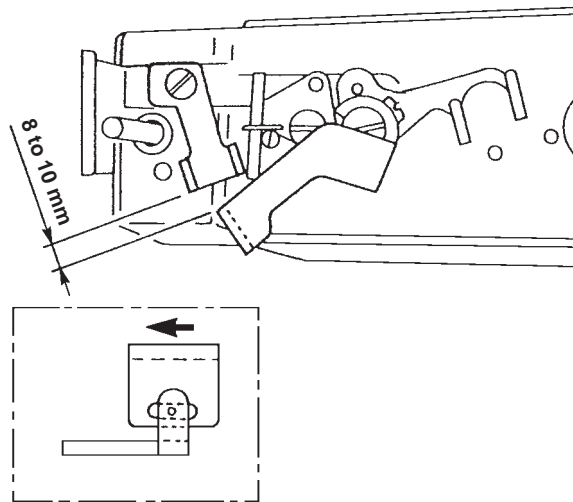
Adjustment Procedures	Results of Improper Adjustment
<ul style="list-style-type: none"> ○ Loosen two screws ❶ and adjust so that the roller of the knot-tying arm comes in contact with the knot-tying notch when the needle bar goes up at the fourteenth stitch as high as 30 to 35 mm above the needle bar upper bushing. ○ If two knot-tying notches are to be installed (without cross-over stitch), make the aforementioned adjustment at the 6th and 14th stitches. 	<ul style="list-style-type: none"> ○ If the position is higher than that of the specified adjustment value, tightness of stitch at the final stitch will be weakened. ○ If the position is lower than that of the specified adjustment value, the thread bind plate hooks thread before pulling it up together with thread already pulled up causing dirty stitches on the wrong side of the fabric.
<ul style="list-style-type: none"> ○ Make adjustment by loosening two screws ❶ of the connecting plate. <div data-bbox="290 1473 813 1684" data-label="Image"> </div>	<ul style="list-style-type: none"> ○ If the clearance is too large, tightness of knot-tying at the final stitch will be weakened. ○ If the clearance is too small, the thread bind plate is likely to come in contact with the needle.

Standard Adjustment

(5) Adjusting the tension lever (Exclusive for MB-377)

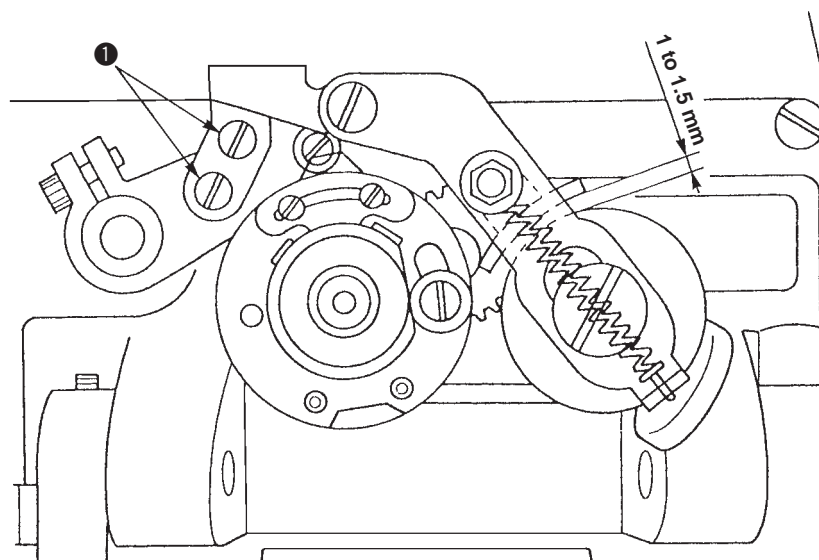
When the machine is in the stop-motion state, the distance between the end surface of the tension guide and the tip of the tension lever should be 8 to 10 mm.

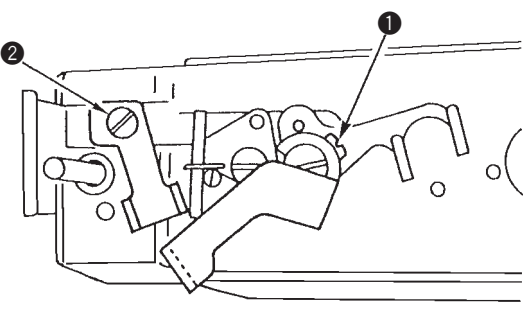
Be sure at the time of starting (push the pedal once when the power is OFF) that the hole of the tension guide is located within the range of the slot of the tension lever.



(6) Adjusting the speed slowing friction plate (MB-377)

When the roller of the stitch adjusting arm rides over the outmost periphery of the stitch adjusting cam (at the time of starting), the clearance between the speed slowing friction plate and the speed slowing friction wheel should be 1 to 1.5 mm.



Adjustment Procedures	Results of Improper Adjustment
<ul style="list-style-type: none"> ○ Make adjustment by loosening screw ❶ of the tension lever. At the time of starting, make adjustment by loosening screw ❷ of the tension guide. 	<ul style="list-style-type: none"> ○ If the clearance is too large, thread-breakage will occur. ○ If the clearance is too small, tightness of stitch will be weakened.
<ul style="list-style-type: none"> ○ Make adjustment by loosening screw ❶ of the speed slowing lever. 	<ul style="list-style-type: none"> ○ If the clearance is too large, the start of the brake will be delayed and the stop motion cam may bound or produce a loud noise at the time of stop-motion. ○ If the clearance is too small, the brake will start too early resulting in hindering the stop-motion.

5. CORRECTIVE MEASURES FOR STITCHING TROUBLES

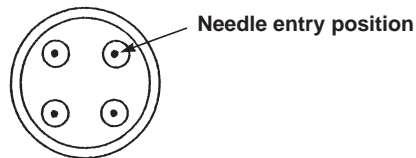
(1) Thread breakage

- 1) The looper hooks thread twice due to improper lengthwise positioning of the yoke slide.
 - Move the loop positioning finger cam back and forth to make readjustment so that the blade point of the looper passes through the center of the thread triangle at the 9th or 10th stitch.
- 2) The tension of the tension disc No. 1 is too high.
 - Decrease the tension to approx. 7 to 15 g.
- 3) The floating timing of the tension disc No. 2 is too late.
 - For adjusting the height of the needle bar, refer to the table of (5) The floating timing of the tension disc No. 2, p.6.
- 4) The crosswise travel timing of the yoke slide is not correct.
 - For adjusting the height of the needle bar, refer to the table of (3) Timing the travel of the yoke slide, p.4.
- 5) The looper catches thread twice due to an incorrect lengthwise travel timing of the yoke slide.
 - Correct the timing so that the yoke slide begins to go back immediately after the blade point of the looper has passed through the thread triangle.

(2) Thread remaining and/or poor tightness of stitches

(The thread remaining means that the thread of an ending stitch is trailed or left 5 to 10 mm from the knot.)

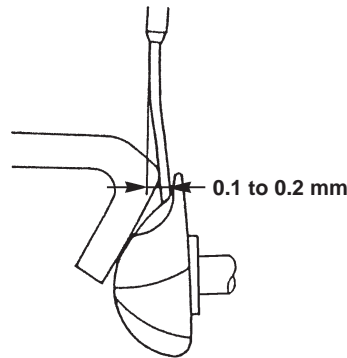
- 1) The tension of the tension disc No.1 is insufficient.
 - Increase the tension to approx. 7 to 15 g.
- 2) The tension disc No. 2 floats too early.
 - For adjusting the height of the needle bar, refer to the table of (5) The floating timing of the tension disc No. 2, p.6.
- 3) The crosswise travel timing of the yoke slide is bad.
 - For adjusting the height of the needle bar, refer to the table of (3) Timing the travel of the yoke slide, p.4.
- 4) The position of needle entry into a button hole is not correct.
 - Correct the position of needle entry so that the needle comes down slightly behind the center of a button hole, preventing the needle front from touching the button hole.
- 5) The amount of the lift of the button clamp jaw lever is not enough.
 - Readjust the lift to 9 mm.



(Corrective measure against thread remaining)

(3) Skip of stitches

- 1) Readjust and coordinate the needle and looper timing.
- 2) For stitching heavy-weight or hard materials, the needle guide should touch the needle by 0.1 to 0.2 mm as shown in the figure.



(4) Thread slippage from the needle

(Thread slips from the needle, and stitches are not formed from the beginning.)

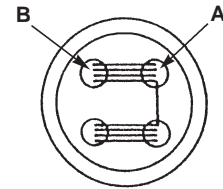
- 1) Increase the travel of the thread pull-off lever.
- 2) The clearance between the thread nipper and the nipper block is too large.
 - Correct the clearance to 0.8 to 1.2 mm. (In case of MB-377, 0.5 to 0.8 mm)
- 3) Prevent skipped stitches.
- 4) Decrease the tension of the thread tension No. 3 of the front cover. (In case of MB-377)

(5) Excessive remaining thread

Excessive remaining thread (needle thread)

(The end of thread of a beginning stitch is left on the top of a button.)

- 1) The end of thread comes out from "A" hole.
 - Decrease the travel of the thread pull-off lever.
- 2) The end of thread comes out from "B" hole.
 - Increase the travel of the thread pull-off lever.



Excessive remaining thread (looper thread)

(The end of thread of a beginning stitch is left on the wrong side of a fabric.)

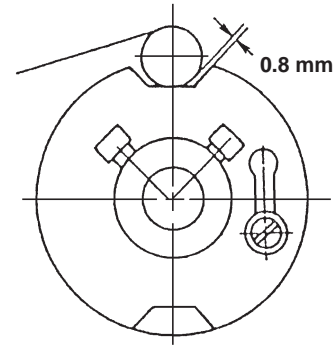
- 1) Decrease the travel of the thread pull-off lever.
- 2) The end of thread of a beginning stitch comes out from a point different from the point where the needle enters when observing the wrong side of a fabric.
 - Increase the work pressing force.



6. CORRECTIVE MEASURES FOR MECHANICAL FAILURES

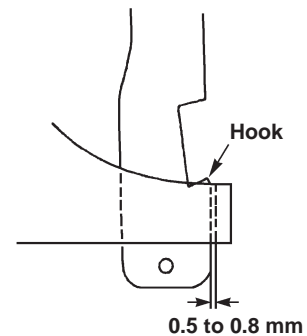
(1) Defective stop motion

- 1) The sound of the stop motion is low, and the machine stops before reaching the required position.
 - Decrease the clearance between the stitch adjusting cam and the roller.
 - Decrease the tension of the clamping pressure spring.
 - Reduce the axial play of the needle driving pulley at the time of stop motion.



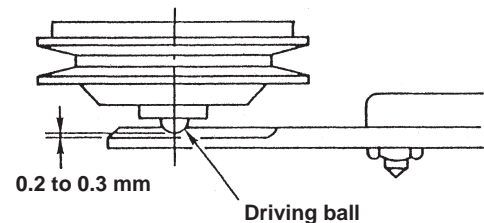
(2) The button clamp does not go up.

- 1) The hook of the button clamp lifting link has worn out.
 - Replace the button clamp lifting link with a new one.
- 2) The clearance between the button clamp lifting link and the button clamp forked rod is too large.
 - Correct it to 0.5 to 0.8 mm.
- 3) The clearance between the stitch adjusting cam and the roller is too large.
 - Readjust it to 0.8 mm.



(3) The clutch of the needle driving pulley slips.

- 1) The driving ball and the needle driving pulley have worn out.
 - Replace the above two components, and the pulley insert.
- 2) Reduce the clearance between the driving ball and the needle driving pulley pressure applying lever.
 - Readjust the clearance to 0.2 to 0.3 mm.



(4) The needle driving pulley is overheated, and the starting pedal does not work smoothly.

- 1) Increase the clearance between the driving ball and the needle driving pulley pressure applying lever.

7. THREAD TRIMMING TROUBLES AND THE CORRECTIVE MEASURES

Troubles	Causes	Corrective measures
1. Thread is not trimmed.	The thread separating claw of the moving knife fails to separate the thread on a fabric from that on the needle.	Correct the position of the moving knife. Refer to the clause "3. (3) Adjusting the position of the moving knife" (page 18).
	The needle does not come down into the correct point of a button hole.	Make readjustment by the button clamp holder.
	The final stitch is skipped.	Correct the position on the looper. Refer to the clause "2. (2) Positioning the needle and the looper" (page 2).
	The height of the thread separating claw of the moving knife is not correct.	Correct the height of the thread separating claw of the moving knife. Refer to the clause "3. (4) Adjusting the height of the thread separating claw of the moving knife" (page 18).
2. Both the thread on the needle and that on the wrong side of a fabric are trimmed.	Improper height of the thread separating claw of the moving knife.	Correct the position of the moving knife at the time of completion of the stop motion. Refer to the clause "3. (3) Adjusting the position of the moving knife" (page 18).
	Improper height of the thread separating claw of the moving knife.	Correct the height of the thread separating claw of the moving knife. Refer to the clause "3. (4) Adjusting the height of the thread separating claw of the moving knife" (page 18).
3. The trimmed thread on the wrong side of a fabric is too long.	The trimming timing of the moving knife is bad.	Correct the position of the moving knife. Refer to the clause "3. (3) Adjusting the position of the moving knife" (page 18).
	The lift of the button clamp is too large.	Readjust the lift. Refer to the clause "2. (6) Lift and pressure of the button clamp" (page 8).

(Caution) Perform the adjustment dimension of the position of the moving knife (adjustment) within the range described in the table below.

If the adjustment value is smaller, the moving knife will overrun at the time of the stop motion, and the thread separating claw will hit the fixed knife or the yoke slide insert, resulting in damaged thread separating claw of the moving knife. On the other hand, if it is larger, the thread separating claw may come in contact with the positioning finger yoke slide while the machine is running, also causing breakage of the thread separating claw.

Model	Moving knife position (adjustment) dimension
MB-373	12 to 13 mm
MB-373-11	15 to 16 mm
MB-377	10.5 to 12.5 mm

8. CAUSES OF TROUBLES AND THE CORRECTIVE MEASURES FOR MB-377

Troubles	Causes	Corrective measures
1. Needle thread breaks after the machine stops.	The tension lever has been improperly adjusted.	Properly adjust the tension lever.
	Lifting amount of the button clamp jaw unit is excessive.	Adjust the lifting amount of the button clamp jaw lever to 8 mm.
	The nipper has been improperly adjusted.	Adjust the nipper with the nipper bar block.
2. The machine forms a seam after it has run for a while instead of forming it from the start of sewing.	The thread pull-off lever has been improperly adjusted.	Properly adjust the rocker shaft of the thread pull-off lever.
	Tension of the thread tension guide on the face plate is excessive.	Adjust the thread tension guide on the face plate so that it provides a lower tension.
3. The last back-tack stitch is poorly tensed.	The tension lever has been improperly adjusted.	Properly adjust the tension lever.
	The nipper has been improperly adjusted.	Adjust the nipper with the nipper bar block.
	Timing of the knot-tying plate is incorrect.	Advance the timing of the knot-tying plate. (Adjustment of the knot-tying notch.)
4. Length of thread remaining, after thread trimming, on the wrong side of the material varies.	Position of the moving knife is not correct.	Adjust the position of the moving knife when the machine completes stop-motion. (10.5 to 12.5 mm)
	Lifting amount of the button clamp jaw unit is excessive.	Adjust the lifting amount of the button clamp jaw lever to 8 mm (for □ -shaped tacking and Z-shaped tacking) or 10 mm (for X-shaped tacking).

PREFACE

This Engineer's Manual is written for the technical personnel who are responsible for the service and maintenance of the machine.

The Instruction Manual for these machines intended for the maintenance personnel and operators at an apparel factory contains operating instructions in detail. And, this manual describes "Standard Adjustment", "Adjustment Procedures", "Results of Improper Adjustment", and other important information which are not covered by the Instruction Manual.

It is advisable to use the relevant Instruction Manual and Parts List together with this Engineer's Manual when carrying out the maintenance of these machines.

This manual gives the "Standard adjustment" on the former page under which the most basic adjustment value is described and on the latter page the "Results of improper adjustment" under which stitching errors and troubles arising from mechanical failures and "How to adjust" are described.

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SINGLE THREAD, CHAINSTITCH BUTTON ATTACHING
MACHINE WITH AUTOMATIC THREAD TRIMMER

MB-373

MB-377 (WITH KNOT-TYING MECHANISM)

ENGINEER'S MANUAL

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