JUKI

High-speed, single-thread, chainstitch, buttonholing machine

MBH-180

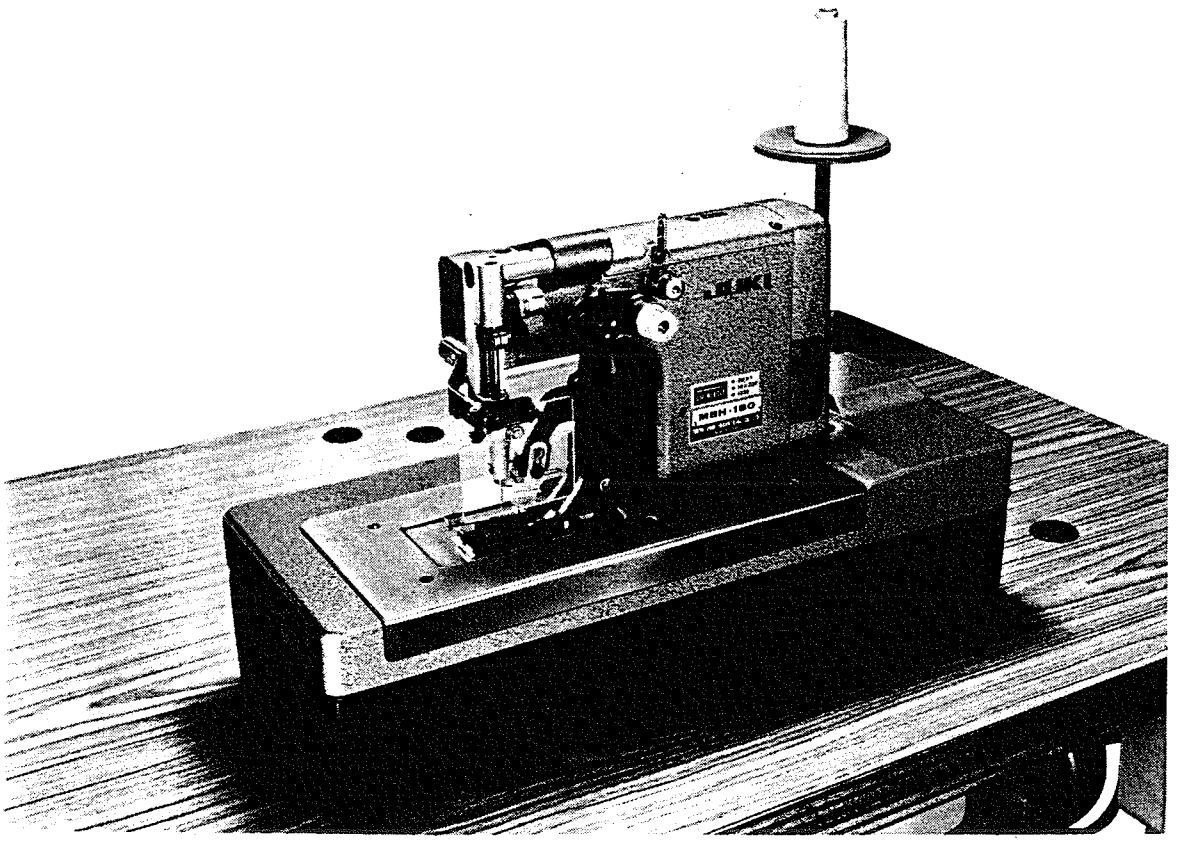
High-speed, single-thread, chainstitch, decorative buttonholing machine

MBH-180S

High-speed, single-thread, chainstitch, label attaching machine

MBH-180L

ENGINEER'S MANUAL

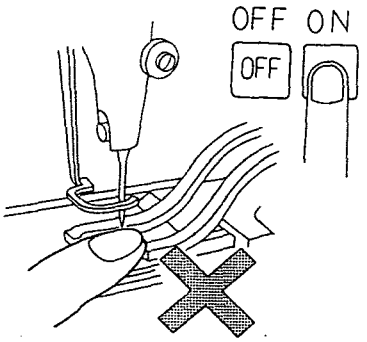


No. II-9
1991. 11

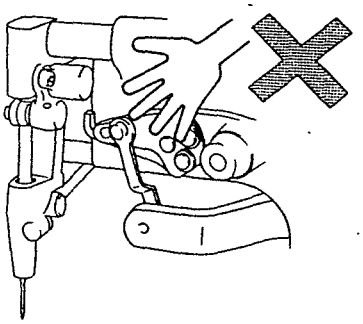
PREFACE

This Engineer's Manual is written for the technical personnel who are responsible for the service and maintenance of the sewing machines. This manual describes "How to adjust", "Results of improper adjustment" and other functions which are not covered by the Instruction Manual intended for the maintenance personnel and sewing operators at a sewing factory.
When performing maintenance of this machine, refer to Instruction Manual and Parts List as well as this Engineer's Manual.
The Engineer's Manual consists of two parts; the former part presents illustration and simplified explanation; and the latter part provides "Results of improper adjustment" in which sewing and/or mechanical failures are described and "How to adjust" in which the adjusting procedures are explained.

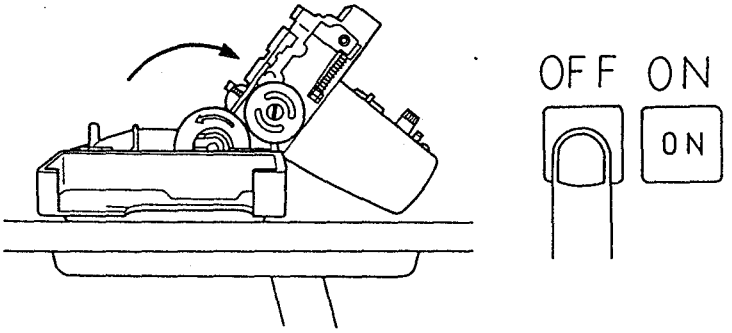
CAUTION



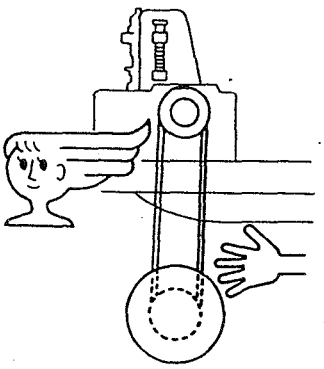
1. Don't put your hand under the needle when you turn "on" the power switch or operate the machine.



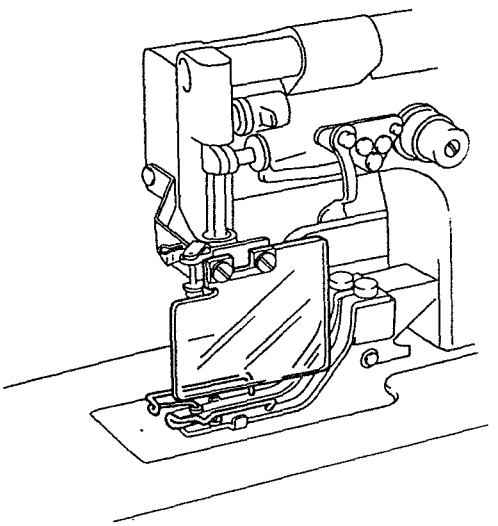
2. Don't put your hand into the thread take-up cover while the machine is running.



3. Don't forget to cut off the power supply before you tilt the machine head backwards or replace the V-belt.



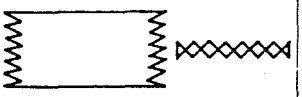
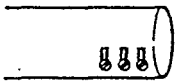
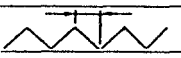
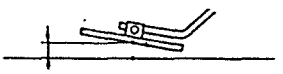
4. Never bring your fingers or hair close to, or place anything on the handwheel, V-belt, bobbin winder wheel or motor during operation. It may lead to serious personal injuries.



5. If your machine is provided with a belt cover, finger guard and eye guard, never operate your machine with any of them removed.

CONTENTS

1. SPECIFICATIONS

1	Model	MBH-180	MBH-180L	MBH-180S
2	Name	High-speed, single-thread, chainstitch, buttonholing machine	High-speed, single-thread, chainstitch, label attaching machine	High-speed, single-thread, chainstitch, decorative buttonholing machine
3	Application	For buttonholing shirts, etc. 	For sewing labels and bartacking 	For decorative button-holing. 
4	Sewing speed	3,300 s.p.m.		
5	Seam length	1/4" (6.4 mm) to 1-3/8" (34.9 mm)	1/4" (6.4 mm) to 1-1/2" (38.1 mm)	1/4" (6.4 mm) to 7/8" (22.2 mm) (Seam as long as 1-1/2" (38.1 mm) can be sewn by replacing the work clamp foot.
6	Needle	DB x 1 #11 to #16	DB x 1 #11 to #14	DB x 1 #11 to #16
7	Zigzag width	1.6 to 2.4 mm (sewing possible area)		
8	Needle bar stroke	27 mm		
9	Looper mechanism	A pair of loopers (right and left) makes both-direction stroke		
10	Thread take-up mechanism	Modified-shape needle bar thread take-up		
11	Seam length adjusting method	By slit-slide method		
12	Stitch length adjusting method	By slit-slide method		
13	Stitch length	0.4 to 1 mm 		
14	Thread trimming method	Thread is trimmed by the counter knife and the thread spreader.		
15	Work clamp foot lifting method	By the auto-lifter or the hand lifter		
16	Lifting amount of the work clamp foot	Max. 7 mm (normal : 5mm) 	Max. 2 mm (at the front end position)	Max. 7 mm (normal : 5 mm)
17	Lubrication	By an oiler		
18	Standard dimensions	470 mm x 212 mm x 163 mm		
19	Machine head weight	42 kg		
20	Motor	3-phase, 200 W, general-purpose motor		
21	Noise	90 dB or less when sewing the parallel section of buttonhole		

Standard adjustment

(1) Adjusting the needle bar height

When the needle bar is in the highest position of its stroke, a distance of 8.5 mm should be provided between the top surface of the throat plate and the top end of the needle.

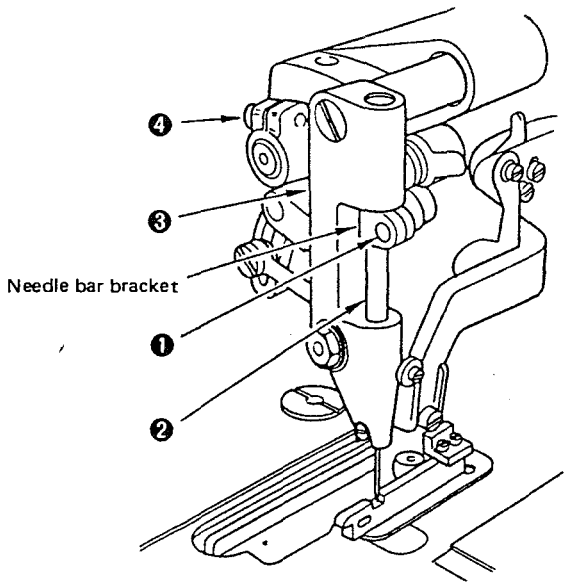


Fig. 1

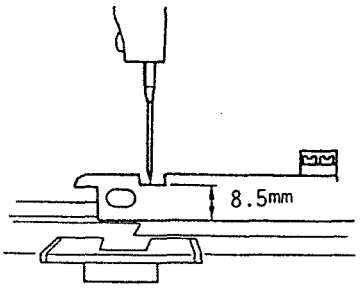


Fig. 2

(2) Adjusting the needle entry point for the needle bar rocking motion

Standard adjustment
- MBH-180 : 2 mm
- MBH-180S : 2.4mm
- MBH-180L : 2.4mm

* Standard adjustment of the ACF-182 is 2 mm.

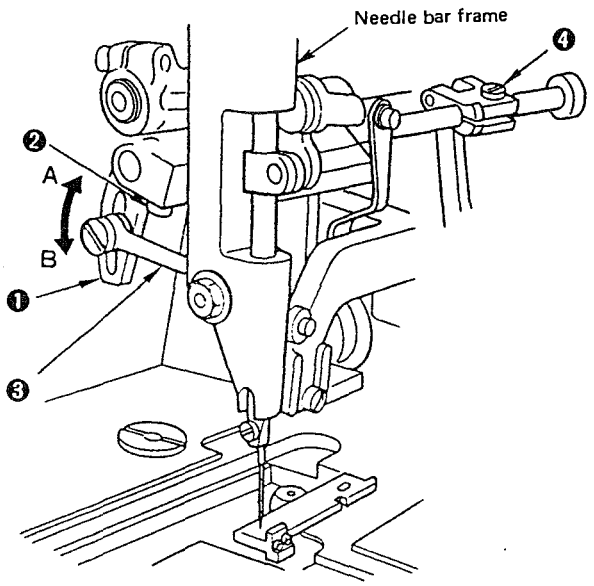


Fig. 4

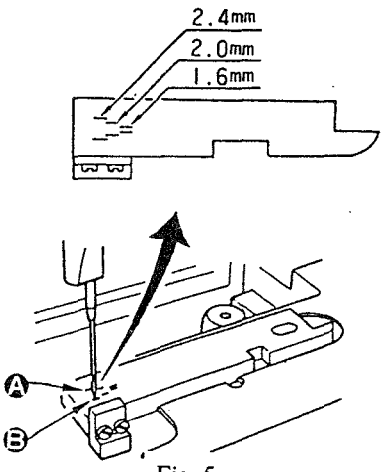
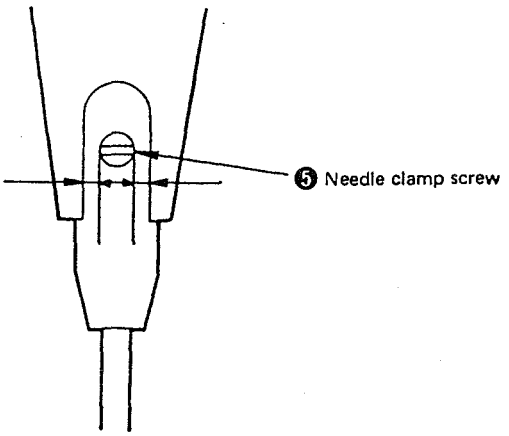
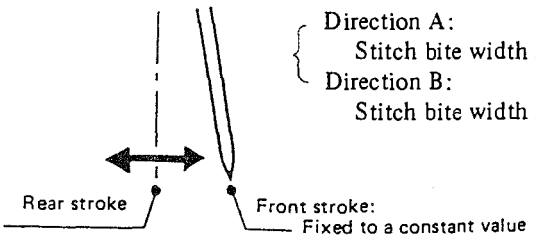


Fig. 5

How to adjust	Results of improper adjustment
Place a timing gauge on the throat plate as illustrated in Fig. 2, and bring needle bar ❷ to the highest dead point. Loosen needle bar connection screw ❶ , and adjust the height of the needle bar as illustrated in Fig. 2 by placing needle clamp screw ❺ in the direct side-to-side center of the slit taking care not to allow the screw to come in contact with the slit edge as illustrated in Fig. 3.  Fig. 3	1. Changing the needle bar height affect the looper timing, resulting in stitch skipping or loose stitches. So do not change the needle bar height. 2. Avoid adjusting the needle bar height using the clamping screw ❹ in the needle bar lifting shaft. Doing so may change the stroke of the needle bar.
1. Remove the throat plate, and put the timing gauge in the throat plate installing groove. Align the needle entry point for the front stroke with the marker line engraved on side Ⓐ of the timing gauge. To adjust the needle entry position, remove the top cover, loosen clamping screw ❹ in the frame rock shaft crank and perform the adjustment. 2. Adjust the stitch bite width by raising/lowering needle bar frame rock link ❸ in the slit on needle bar frame drive adjusting crank ❶ so that the needle tip is aligned with the marker line engraved on side Ⓑ of the timing gauge at the needle entry for the rear stroke. 3. The aforementioned adjustment should be carried out while making the machine run in the normal direction. If you allow the machine to run both in the normal and reverse directions when you perform the adjustment, you may not able to obtain the correct needle entry point.  Fig. 6	1. Changing the stitch bite width changes the looper-to-needle timing. So whenever you have changed the stitch bite width, also adjust the looper timing without fail. * Do not use clamping screw ❷ in the needle bar frame drive adjusting crank to adjust the needle entry. Use clamping screw ❹ in the needle bar frame crank to adjust it. Adjusting the needle entry using clamping screw ❷ may cause an axial play.

(3) Adjusting the looper timing

1) Looper No. 1
(the looper located on the right-hand side as observed from the front side of the machine)
Looper No. 2
(the looper located on the left-hand side as observed from the front side of the machine)
} 8.2 mm each

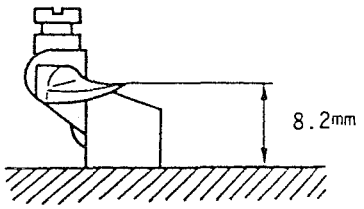


Fig. 7

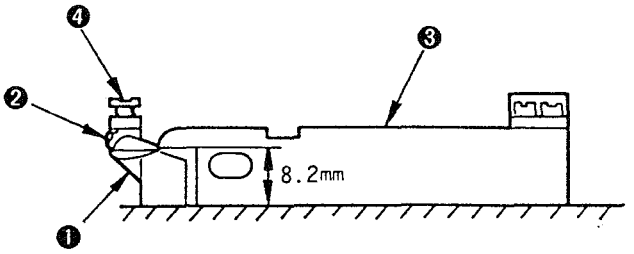


Fig. 8

2) Adjusting the looper No. 1

① Make the looper come in contact with plane A when the looper is in its rear end.

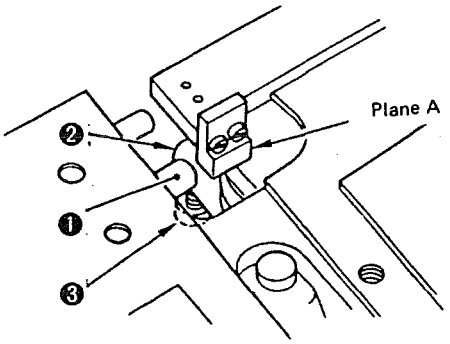


Fig. 9

② Clearance between the needle and the looper point

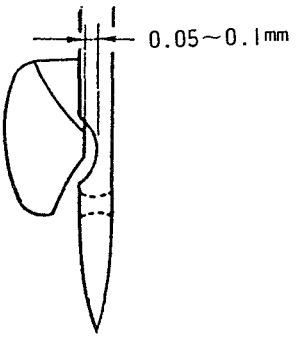


Fig. 10

③ When the looper point is aligned with the side of the needle when the looper scoops the thread

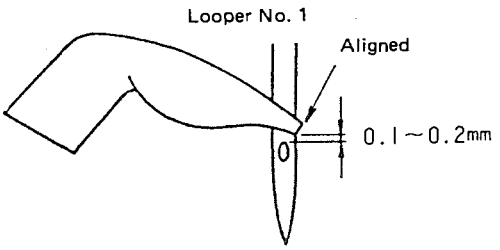
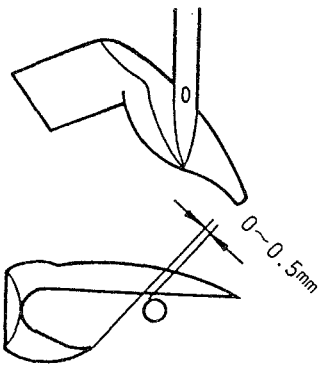


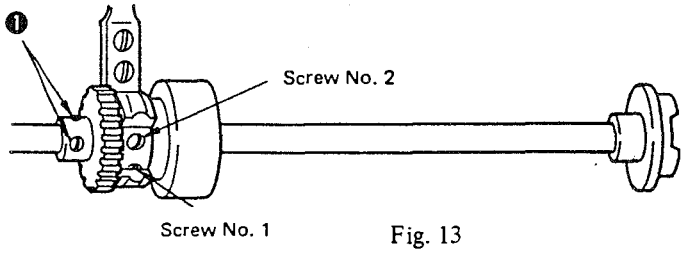
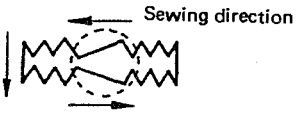
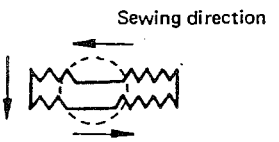
Fig. 11

④ The needle drops behind the looper



The position where the needle does not come in contact with the looper.
0 to 0.5 mm

Fig. 12

How to adjust	Results of improper adjustment
1. Adjusting the inclination of the loopers Use a timing gauge for this adjustment. The loopers No. 1 and No. 2 can be adjusted following the same adjusting procedure. Fit looper ❷ first in looper mounting base ❶ shown in Fig. 8, and temporarily tighten screw ❹. Then, place timing gauge ❸ on a flat board as illustrated in Fig. 8, and firmly tighten screw ❹.	1. If the inclination of the looper is not adjusted with accuracy, the thread may fail to come off the looper, resulting in stitch skipping or poorly tensed stitches.
2. Adjusting the looper No. 1 ① Position of the looper with respect to the direction of rotation Fit looper mounting base ❷ in looper shaft ❶, and set the timing gauge on the machine bed as illustrated in Fig. 9. Then press the top end of the looper against plane A of the timing gauge when the looper is in its rear end, and temporarily tighten screw ❸. ② Adjusting the clearance between the needle and the looper When the looper travels forward until it is positioned as illustrated in Fig. 11, adjust the clearance between the needle and the looper to 0.05 to 0.1 mm. Then securely tighten the screw in the looper mounting base. ③ Adjusting the looper when it scoops the thread Loosen two screws ❶ shown in Fig. 13. If the distance between the needle eyelet and the looper is too large, loosen the screw No. 2 and tighten the screw No. 1. On the other hand, if the distance between the needle eyelet and the looper is too small, loosen the screw No. 1 and tighten the screw No. 2. After the looper is correctly positioned, firmly tighten the two screws. Do not forget to tighten screws ❶.  Fig. 13 ④ Adjusting the position where the needle drops behind the looper Adjust the position where the needle drops behind the looper simultaneously with the adjustment of the position of the looper at the time of scooping the thread.	2. Be sure to use a timing gauge when adjusting the position of the looper with respect to the direction of rotation. If not, the position of the looper when scooping the thread cannot be adjusted with ease in the next step of adjustment. 3. Stitch skipping may result. Minimize the clearance between the needle and the looper when using light-weight materials or elastic materials as long as the looper does not come in contact with the needle. * If the blade point of the looper No. 1 fails to scoop the loop of thread:  * If the needle fails to drop behind the looper No. 1: 

3) Adjusting the looper No. 2

① Press the looper No. 2 against plane B when the looper is brought to its back end.

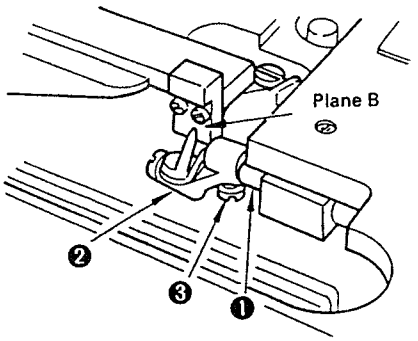


Fig. 14

② The clearance between the needle and the looper point

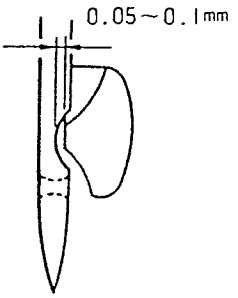


Fig. 15

③ When the blade point is aligned with the side face of the needle when the looper scoops the thread

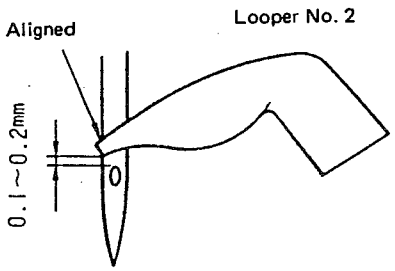


Fig. 16

④ The needle drops behind the looper

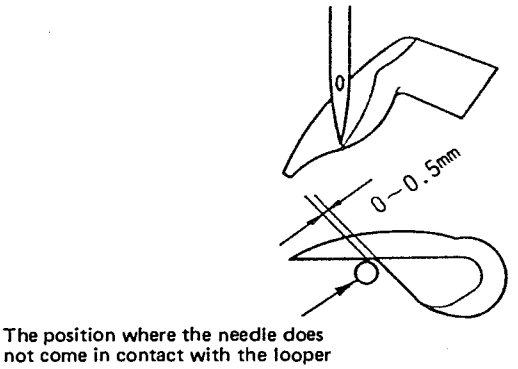
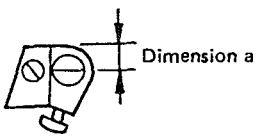
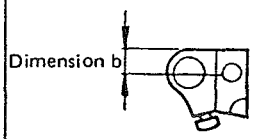
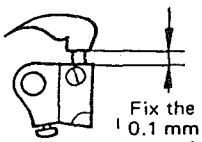
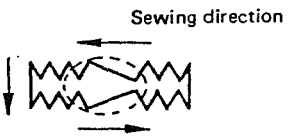
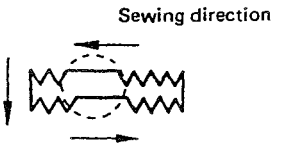


Fig. 17

How to adjust	Results of improper adjustment
1. Adjusting the looper No. 2 ① Position of the looper with respect to the direction of rotation Fit looper mounting base ❷ in looper shaft ❶, and set the timing gauge on the machine bed as illustrated in Fig. 14. Then press the top end of the looper against plane B of the timing gauge when the looper is in its rear end, and temporarily tighten screw ❸. ② Adjusting the clearance between the needle and the looper When the looper travels forward until it is positioned as illustrated in Fig. 16, adjust the clearance between the needle and the looper to 0.05 to 0.1 mm. Then securely tighten the screw in the looper mounting base. ③ Adjusting the looper when it scoops the thread The position of the looper No. 2 is automatically determined since the looper No. 1 has already been adjusted with respect to the looper position when the looper scoops the thread. If the looper No. 2 is not properly positioned, re-adjust the position of the looper No. 1 when the looper scoops the thread. If the looper No. 2 cannot be properly positioned even after the re-adjustment of the looper No. 1, replace the looper mounting base. If you do not have a looper mounting base in stock, provide a clearance between the looper No. 2 and the looper mounting base to adjust the position of the looper No. 2. ＜Looper No. 1 mounting base＞  Dimension a — Part No. 3.85mm — B2521180B00 3.95mm — B2521180C00 4.05mm — B2521180D00 4.15mm — B2521180E00 ＜Looper No. 2 mounting base＞  Dimension b — Part No. 3.75mm — B2522180A00 3.85mm — B2522180B00 3.95mm — B2522180C00 4.05mm — B2522180D00 4.15mm — B2522180E00  Fix the looper while providing an approximately 0.1 mm clearance between the looper and the mounting base. (Caution) **If the clearance between the looper and the looper mounting base is too large, durability of the looper may be impaired. So do not provide too large clearance between them.** To prevent stitch skipping, it is quite necessary for you to correctly positioned the loopers by performing the aforementioned adjustments. ④ The position where the needle drops behind the looper Adjust the position where the needle drops behind the looper simultaneously with the adjustment of the position of the looper at the time of scooping the thread.	1. Be sure to use a timing gauge when adjusting the position of the looper with respect to the direction of rotation. If not, the position of the looper when scooping the thread cannot be adjusted with ease in the next step of adjustment. 2. Stitch skipping may result. Minimize the clearance between the needle and the looper when using light-weight materials or elastic materials as long as the looper does not come in contact with the needle. * If the blade point of the looper No. 2 fails to scoop the loop of thread:  * If the needle fails to drop behind the looper No. 2: 

(4) Adjusting the thread tension release mechanism

The tension disk floats while the machine is performing bartacking to prevent the thread from being tensed.
Adjust, when the sewing machine is sewing the parallel sections of a buttonhole, so that a clearance of 0.5 to 0.8 mm is provided between thread tension release pin ❷ and thread tension release arm ❶ as illustrated in Fig. 19.

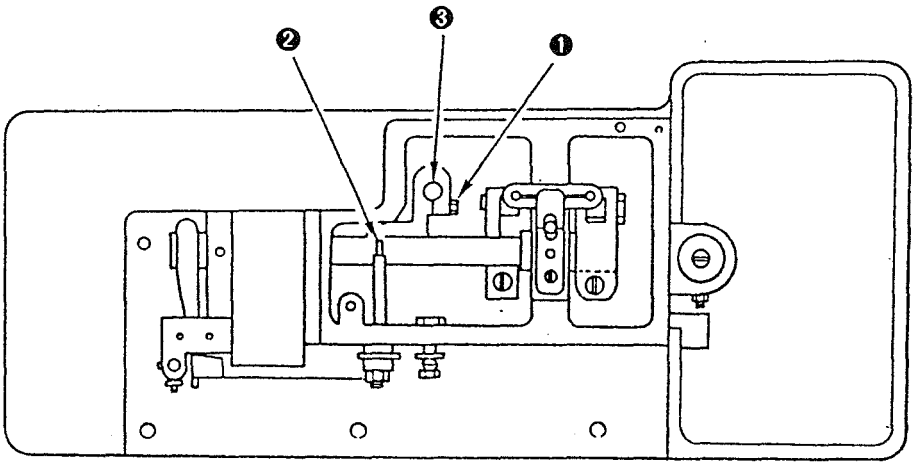


Fig. 18

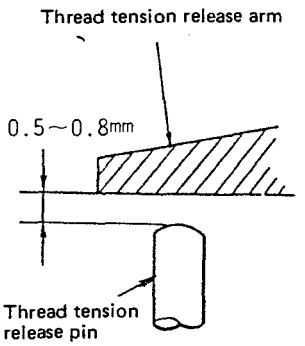


Fig. 19

(5) Adjusting the gears in the vertical stroke of the needle bar

Each of the gears used to control the vertical stroke of the needle bar has an engraved marker dot as illustrated in Fig. 20. Fix the gears with the engraved marker dots aligned.

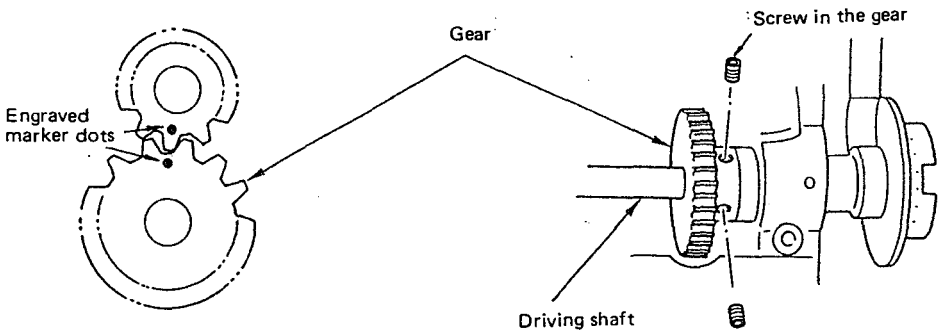


Fig. 20

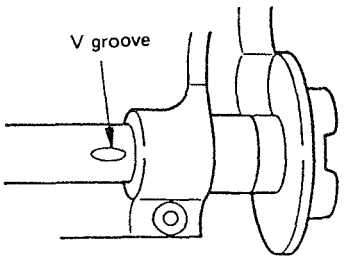


Fig. 21

How to adjust	Results of improper adjustment
1. Let the feed mechanism actuate on the parallel section of a buttonhole. 2. Adjust so that a clearance of 0.5 to 0.8 mm is provided between thread tension release arm ❶ and thread tension release pin ❷. Then tighten the clamping screw of the thread tension release arm. At this time, carefully eliminate an axial play in thread tension release shaft ❸.	1. If the clearance between the thread tension release arm and the thread tension release pin is too large, the thread tension release mechanism will not work. In this case, bartack stitches may be pulled resulting in deformed bartack stitches (bartack stitches will be gathered). On the contrary, if the clearance is too small, the tension disk will be released in the case other than bartacking, resulting in poorly tensed stitched in the parallel section of a buttonhole.
1. Align the engraved marker dots on the respective gears used to control the vertical movement of the needle bar. Then tighten the screw No. 1 (longer screw) with aligned with the V-groove. 2. Bring the sewing machine to its stop-motion position, and confirm that the needle bar is in its highest dead point. **(Caution) It is difficult to remove the two screws in the gears since they have been applied with locking agent. If you would remove the screws in the gears, be sure to retighten the screws applying locking agent on them. If the screws are not locked, they may fluctuate after a long time usage of the sewing machine.**	1. If the engraved marker dots on the gears are not aligned with each other, adjustments of the sewing machine including the adjustment of looper timing will be adversely affected. So be careful.

(6) Adjusting the gear of the feed cam

Adjust the gear of the feed cam so that the engraved marker dot on the gear is aligned with the engraved marker dot on the gear of the looper driving cam as illustrated in Fig. 22.

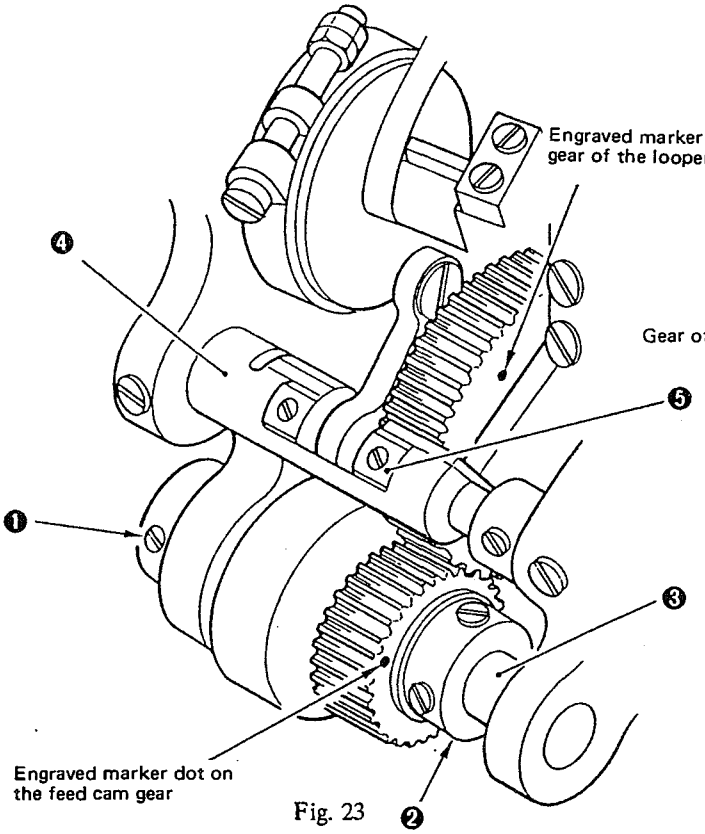


Fig. 23

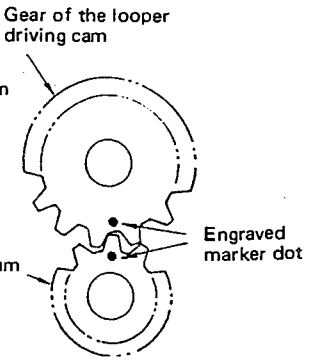


Fig. 22

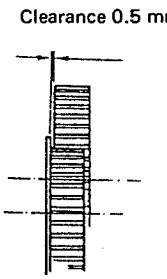


Fig. 24

(7) Adjusting the feed brake

Minimize the pressure of the feed brake as long as the feed case ❸ does not turns both clockwise and counterclockwise but turns only in the single direction, when turning the machine by hand.

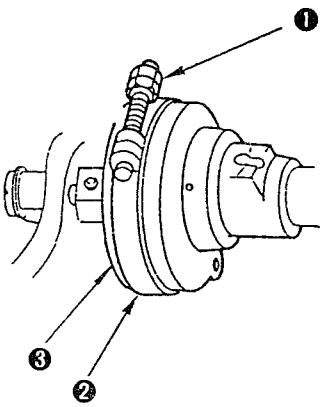
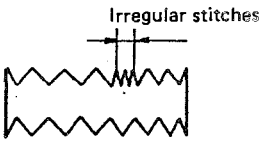


Fig. 25

How to adjust	Results of improper adjustment
1. Loosen two screws ❶ in the feed cam shaft (a screw is tightened in the lower section of the shaft) and feed cam shaft thrust collar ❷ . Then, feed cam shaft ❸ can be removed. 2. Tighten feed cam shaft thrust collar ❷ providing a 0.5 mm clearance between the edge of the looper driving cam and edge of feed cam. When feed block ❺ in feed converting shaft ❹ is brought to the highest dead point, the needle and the looper blade point will come to the standard adjustment position.	1. If the engraved marker dot on the gear of the feed cam is not aligned with the engraved marker dot on the gear of the looper driving cam, the timing between the looper and the needle will be adversely affected. So be careful.
Adjust the pressure of feed brake ❷ using brake spring nut ❶ (double nut).	If the stitch length is shortened at one section of a seam or is not uniform, further increase the pressure of the feed brake. 

(8) Adjusting feed conversion block

When feed conversion block ❶ is brought to its leftmost point, a clearance of 1 mm should be provided between the feed mechanism and the conversion block.

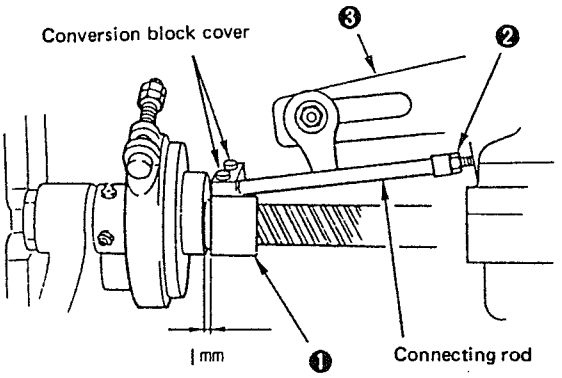


Fig. 26

(9) Adjusting the position of the feed conversion block

(Adjusting the feed pitch for the first line and second line of the parallel section of a buttonhole)

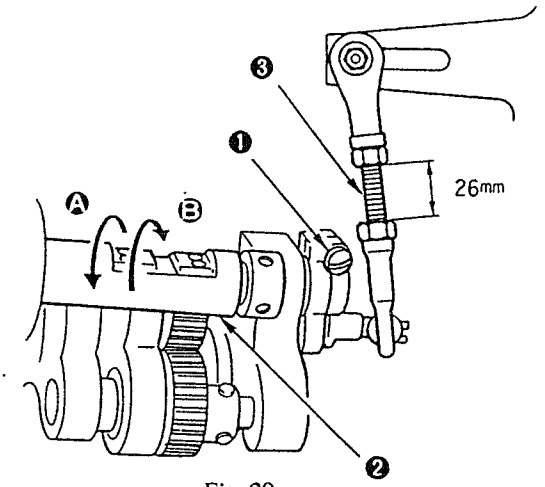
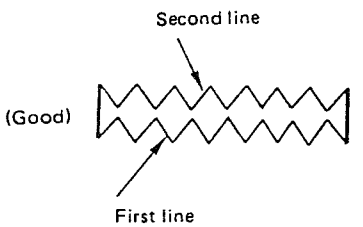


Fig. 29

If the feed pitch for the first line of the parallel section of a buttonhole is not equal to that for the second line of the parallel section of the buttonhole, adjust the feed pitch by turning feed conversion shaft ❷.



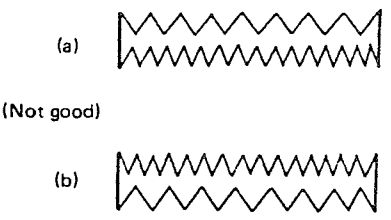
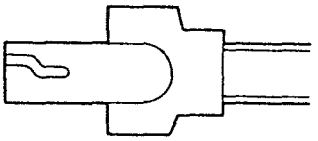
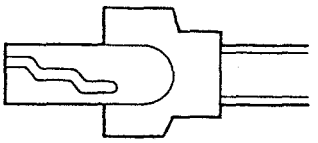
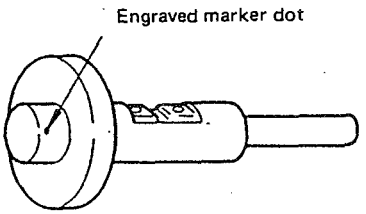


Fig. 30

In the case of (a), turn Ⓐ in the direction of the arrow.
In the case of (b), turn Ⓑ in the direction of the arrow.

How to adjust	Results of improper adjustment
Push or pull adjusting nut ❷ so that a clearance of 1 mm is provided between the feed mechanism and the conversion block when feed conversion block ❶ is brought to the leftmost position of its stroke < For the MBH-180S, MBH-180L >  Fig. 27 Part No. D1651180L00 < For the MBH-180 >  Fig. 28 Part No. B1651180000	The feed conversion block has grooves as illustrated in the figure. The direction of rotation of the clutch changes in accordance with the groove positions. If the feed conversion block is not properly adjusted, the clutch timing will change resulting in a feeding failure.
1. Set feed joint ❸ to 26 mm. 2. Loosen screw ❶ in the feed conversion arm, and adjust the feed pitch properly by turning feed conversion shaft ❷. If the feed pitch for the first line is smaller than that for the second line, turn the feed conversion shaft in direction Ⓐ. If the feed pitch for the second line is smaller than that for the first line, turn the feed conversion shaft in direction Ⓑ. A red marker dot is engraved on the end face of the feed conversion shaft and on the bed boss. These marker dots are used as reference when positioning the feed conversion shaft. These marker dots are aligned when the machine is sewing the first line of parallel section of a standard buttonhole, or aligned when the machine is sewing the second line of parallel section of a decorative buttonhole. So adjust the position of the feed conversion shaft using the marker dots as reference.  Fig. 31	Adjustment of feed conversion shaft ❷ is very delicate. If the shaft is turned by 2 to 3 mm, the feed pitch for the second line will be larger than that for the first line. So deliberately adjust the feed conversion shaft.

(10) Adjusting the clearance between the throat plate and the work clamp foot receiving plate

① Front end of the throat plate and the work clamp foot receiving plate
When work clamp foot receiving plate ❶ is in its back end, a clearance of 0.4 mm should be provided between the receiving plate and throat plate ❷.

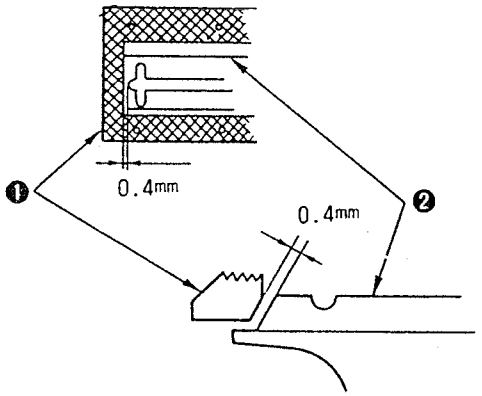


Fig. 32

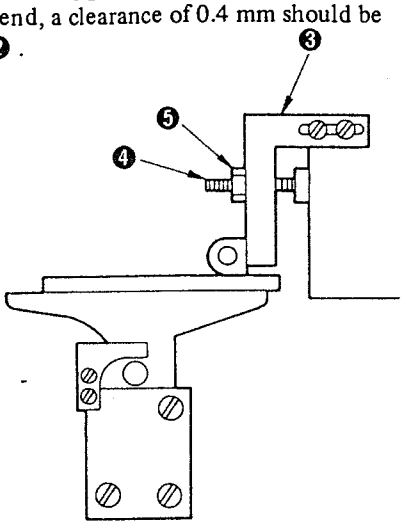


Fig. 33

② Side face of the throat plate and the work clamp foot receiving plate
When the machine is sewing the second line of parallel section of a buttonhole, a clearance of 0.6 mm should be provided between work clamp foot receiving plate ❶ and throat plate ❷.

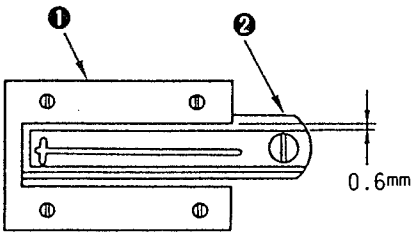


Fig. 34

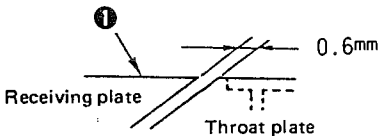


Fig. 35

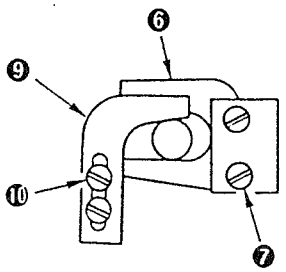


Fig. 36

<MBH-180>

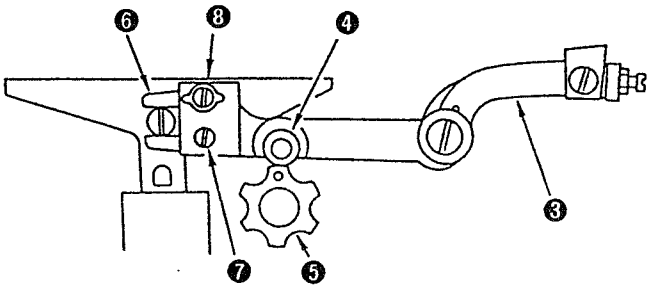


Fig. 37

<MBH-180S>

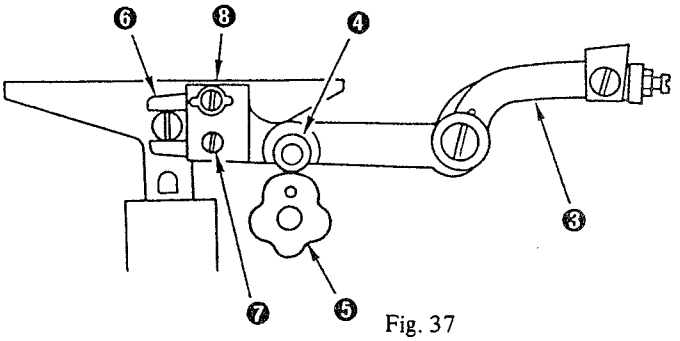
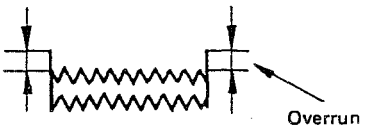
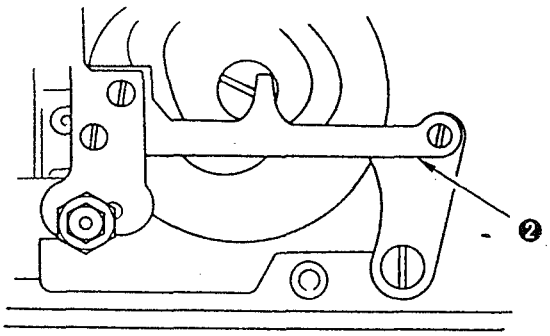


Fig. 37

How to adjust	Results of improper adjustment
Determine the position of the work clamp foot receiving plate using the feed plate stopper mounted on the reverse side of the bed. Adjust so that a clearance of 0.4 mm is provided between work clamp foot receiving plate ❶ and throat plate ❷ using positioning screw ❹ . Then securely tighten nut ❺ .	• If the clearance between receiving plate ❶ and throat plate ❷ is smaller than 0.4 mm, receiving plate ❶ may come in contact with throat plate ❷ , resulting in breakage of the components. • If the clearance between receiving plate ❶ and throat plate ❷ is larger than 0.4 mm, the material may enter the clearance between them or may flap. As a result, sewing will be adversely affected.
Put bartacking cam roller ❹ of bartacking rocker arm ❸ on the higher crest (the six protruded sections consists of five higher crests and one lower crest) of bartacking feed cam ❺ . Then, loosen screw ❼ in forked part ❻ of the rocker arm ❸ , and move T link ❽ up or down to adjust the clearance between work clamp foot receiving plate ❶ and throat plate ❷ to 0.6 mm. Then, place T link stopper ❾ lightly on the boss of T link ❽ , and firmly tighten screws ❿ . * The shape of bartacking feed cam of the MBH-180 is different from that of the MBH-180S as illustrated in Figs. 37 and 38. Also note that the MBH-180L is not equipped with a bartacking feed cam.	If there is a clearance between the T link stopper and the boss, the feed plate may overrun at the time of bartacking. As a result, bartack will be finished as illustrated below. 

(11) Adjusting the worm (adjusting the needle sway)

Move change-over lever ❷ in the right until it will go no further, and the bartacking ratchet will come off allowing the machine to perform bartacking.
Check the needle sway at the bartack section of a buttonhole.
Worm ❶ is correctly positioned as long as the feed plate starts moving in the direction of the arrow when the eyelet of the ascending needle is aligned with the throat plate surface.



図－39

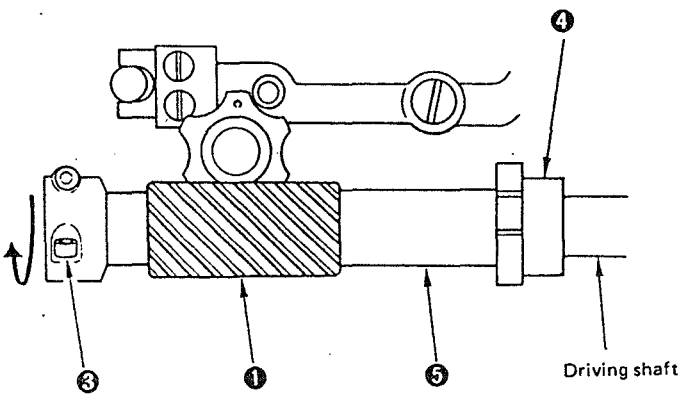
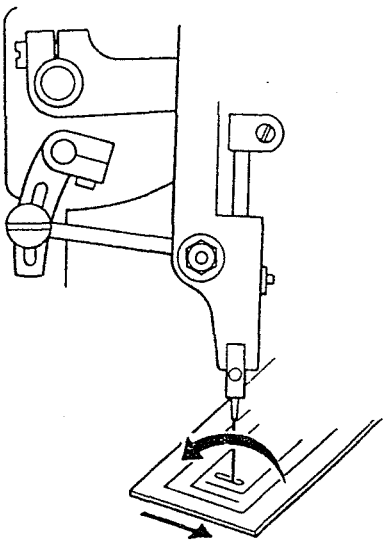


Fig. 40

〈MBH-180、MBH-180L〉



〈MBH-180S〉 Fig. 41

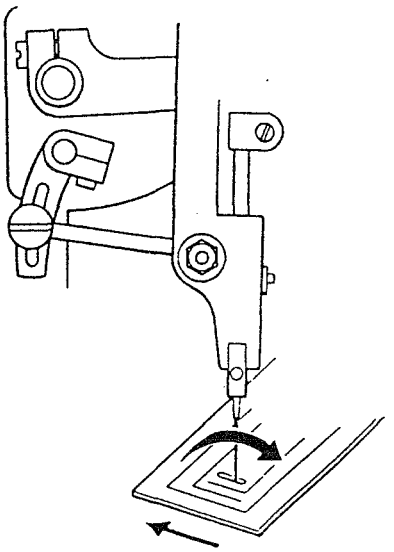


Fig. 42

How to adjust	Results of improper adjustment
1. Re-check the height of the needle bar. (When the needle bar is in its highest dead point, the needle tip should be positioned 8.5 mm above the throat plate surface.) 2. Loosen screw ❸ in the worm, and position worm ❶ so that the adjustment values described in "Standard adjustment" are obtained. 3. Press driving shaft spacer ❺ against worm ❶ so that the worm comes in contact with needle bar frame cam ❹ . Then fix the worm eliminating an axial play. 4. When adjusting the worm, the clearance between stop-motion arm ❻ and driving cam ❼ becomes 1 to 5 mm before the machine enters the stop-motion state (when stop-motion arm ❻ moves above driving cam ❼) as illustrated in Fig. 43. Be sure to confirm that the said clearance is provided between the arm and the cam. Note that the clearance is desired to be smaller from the mechanical point of view though the acceptable range of clearance is 1 to 5 mm.	1. If the timing of needle sway is too early, the sewing pattern shape will be deformed. If the timing is too late, the sewing pattern shape will also be deformed through the well-tensed seam will be obtained. 2. If the timing of needle sway is excessively early or late, the machine may fail to enter the stop-motion state or the stop-motion impact may be excessive or stitch skipping may result. 3. If stitch skipping occurs during bar-tacking when using a throat plate of which needle hole is 1.6 mm wide, replace the throat plate with throat plate of which needle hole is 1.2 mm wide to prevent stitch skipping. In this case, however, note that the thread may be cut by the needle (thread breakage during bartacking) when using the throat plate with a 1.2 mm wide needle hole. So, whenever you have replaced the throat plate with a 1.6 mm wide needle hole with the throat plate with a 1.2 mm wide needle hole, check the sewing machine performance for thread breakage. <ACF-182> Throat plate 1.2 mm Part No. 162-73708 Throat plate 1.6 mm (The machine is equipped with this type of throat plate at the time of delivery.) Part No. 162-73807 Throat plate 2.0 mm Part No. 162-73401

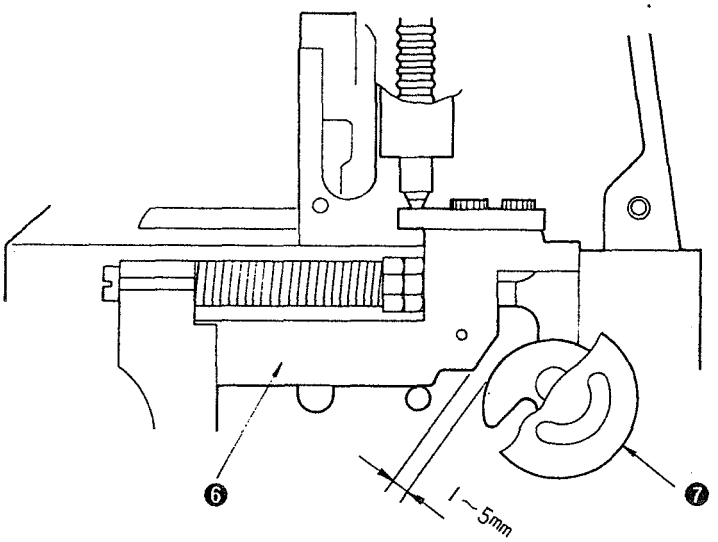
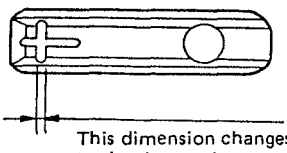


Fig. 43

(Caution) When adjusting the worm, the MBH-180/-180L and the MBH-180S is different in direction in which the needle sways. So be careful. (See Figs. 41 and 42.) Deliberately adjust the worm with accuracy.



This dimension changes according to the throat plates.

(12) Adjusting the bartacking rocker arm stopper (only for the MBH-180)

When stop-motion shaft ❶ moves in the right until stop-motion tripping plate ❷ comes off rocker arm stopper ❸, the hook of rocker arm stopper ❸ will be placed on rocker arm block ❹.
This will determine the position of bartacking rocker arm ❺ when the knife drops.

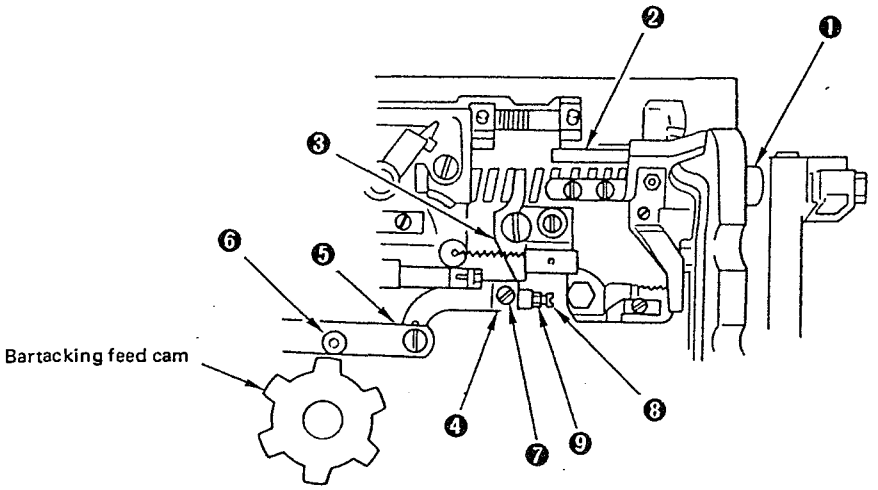


Fig. 44

(13) Adjusting the brake of bartacking groove cam

Adjust the pressure of bartacking brake ❶ during bartacking so that bartacking groove cam ❷ follows the rotation of the worm.

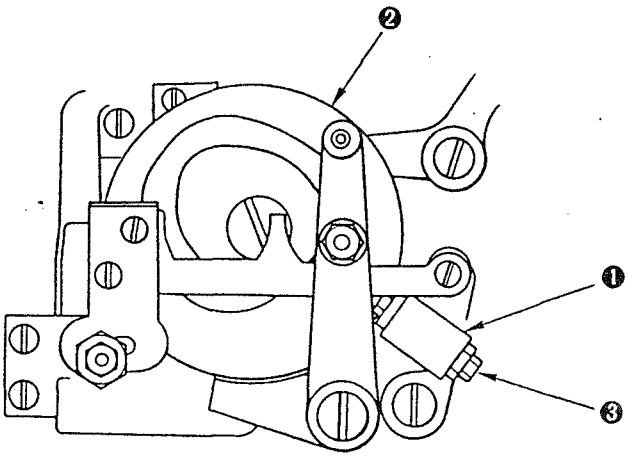


Fig. 45

How to adjust	Results of improper adjustment
Place bartacking cam roller ❻ on the lower crest among the six crests of the bartacking feed cam, lightly press rocker arm block ❹ against the hook of rocker arm stopper ❸ , then temporarily tighten screw ❼ . Then, securely tighten nut ❾ using screw ❽ . Now, firmly tighten screw ❼ which has been temporarily tightened before. * The MBH-180S or -180L does not have a rocker arm stopper. Consequently, the aforementioned adjustment is not necessary for these models.	If the block is excessively pressed upward, the machine may fail to start running or bartack width may not be uniform (over-run, etc.) If the block is insufficiently pressed (the clearance between the block and the hook is too large), the bartack width will not be uniform, either.
Adjust the pressure of the brake by loosening or tightening screw ❸ .	If the brake pressure is too high, defective stop-motion may result. On the other hand, if the brake pressure is too low, malfunction of sewing machine, such as the machine enters the stop-motion state while the machine is in operation, may result.

(14) Adjusting the positioning screw

<MBH-180>

Feed plate ❽ comes in contact with feed plate stopper ❾ immediately before the machine finishes the second line of parallel section of a buttonhole. The standard relationship between change-over lever ❶ and bartacking ratchet ❷ is obtained when they are overlapped with each other by approximately 0.5 mm as illustrated in the figure below.

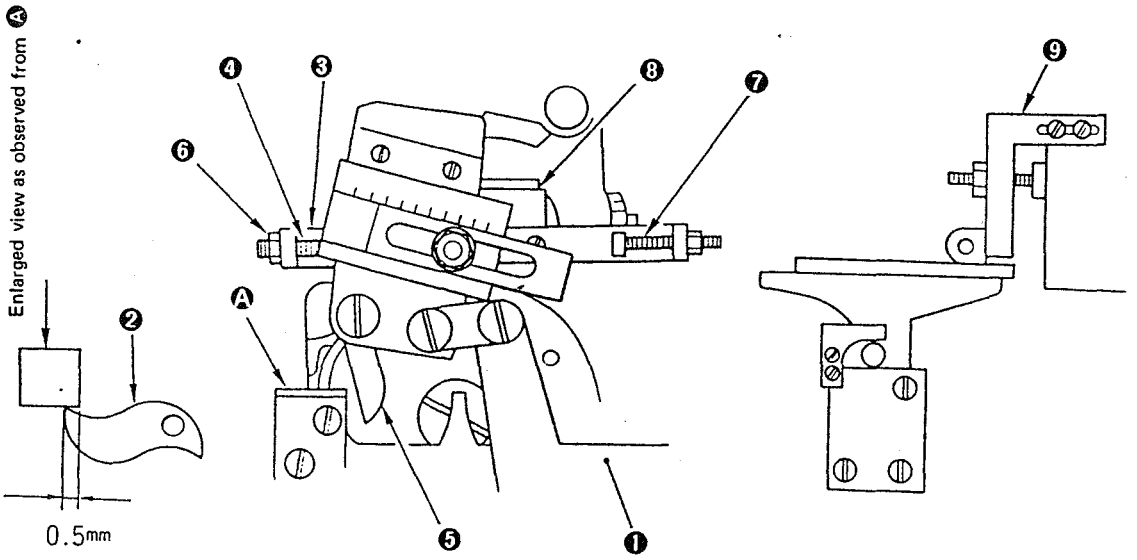


Fig. 46

<MBH-180L>

This machine does not perform bartacking. So, adjusting the positioning screw will change only the sewing length.

<MBH-180S>

The sewing direction of the MBH-180S is opposite to that of the MBH-180.
Changing positioning screw ❻ shown in Fig. 46 will change the needle entry of the first bartack. So, position the positioning screw so that the troubles in sewing including stitch gathering, thread breakage and stop-motion of the sewing machine do not occur during bartacking. The needle entry at the sewing end is determined using positioning screw ❼.

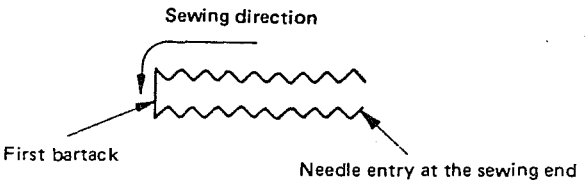


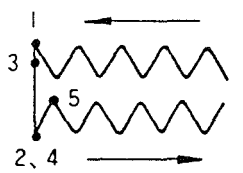
Fig. 47

How to adjust	Results of improper adjustment
1. Adjust the position of change-over arm ❺ using positioning screw ❹ mounted on positioning plate ❸ . Once the change-over arm has been properly positioned, firmly tighten nut ❻ . 2. Other positioning screw ❼ is used to determine the relationship of the arrow and the graduations on the scale plate.	< MBH-180 > This adjustment is carried out to determine the sewing start position and the needle entry at the end of bartack. This is called the "separation of the first stitch". If the clearance between the first needle entry at the sewing start and the last needle entry at the sewing end is too large, move the positioning screw to the left. If the clearance is too small, move the positioning screw to the right.

< Technical information to the point >

Model : ACF-182
Information on : Thread breakage in the bartack section of a buttonhole

Phenomenon :



The needle sticks in the thread resulting in thread breakage.

Fig. 1 Needle entry point diagram

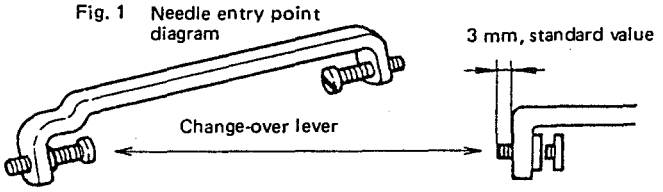
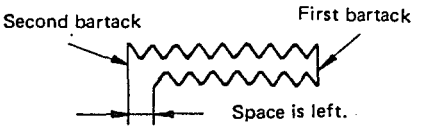


Fig. 2

Corrective measure :

1. The throat plate of which needle hole is 1.6 mm wide is currently used as standard. However, check whether the throat plate is the standard type.
   Part No. of the throat plate : 16273807
   (If the throat plate with a needle hole of 1.2 mm wide, thread breakage is likely to occur.)
2. Slightly decrease the thread tension during bartacking.
3. Check whether the standard value of 3 mm is provided as illustrated in Fig. 2. (If the protruding amount of the screw is not 3 mm, adjust so that the standard value is provided and check the finished state of the seam.)
4. If the screw protrudes from the change-over lever by 3 mm, tighten or loosen the screw by one or two threads to change the change-over timing.



< MBH-180S >

Since adjustment ❻ in Fig. 46 changes the timing of applying tension to the thread at the first bartack, stitches may excessively gather to make a lump of thread or the needle may penetrate the thread resulting in thread breakage.
Adjustment ❼ in Fig. 46 changes the position of the last needle entry at the sewing end. If bartack at the sewing end is not made properly to prevent the stitches from fraying, perform adjustment ❼ .

(15) Adjusting the link spring of the change-over lever

Maximize the pressure of spring as long as stitch gathering does not occur before starting bartacking.

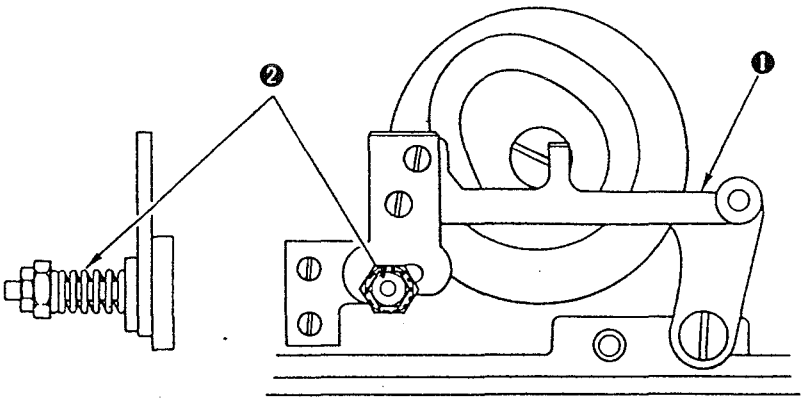


Fig. 48

(16) Adjusting the knife dropping position (MBH-180)

Adjust cloth cutting knife ❶ so that it drops the center of the knife slit on throat plate ❷ .

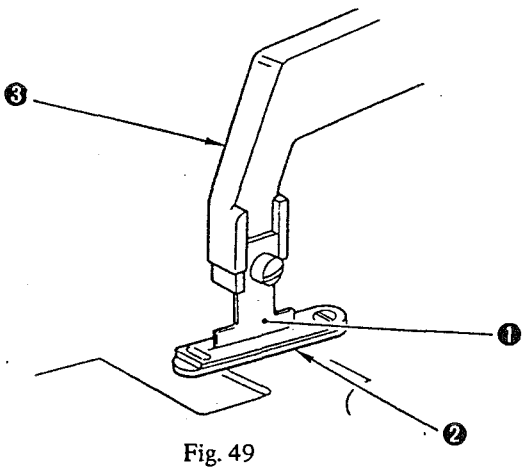


Fig. 49

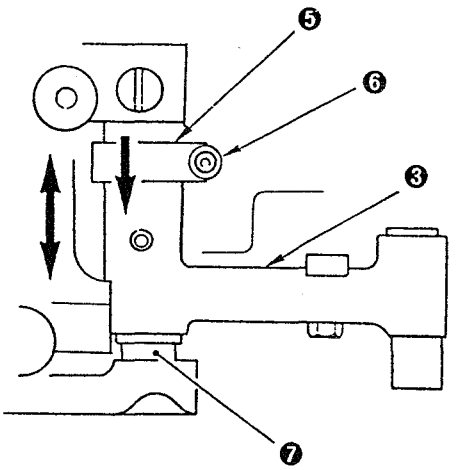


Fig. 50

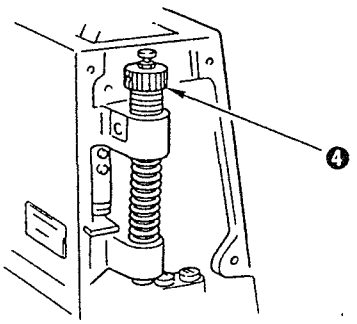


Fig. 51

How to adjust	Results of improper adjustment
Change-over lever ❶ is designed to move to the left and right. Link presser spring ❷ works to prevent the lever from moving except in the case where it is necessary to move the lever. Adjust the link presser spring properly by tightening/loosening the nut.	If the pressure of the link presser spring is too low, the machine may sew a buttonhole that is smaller than the normal size, the machine may fail to perform sewing other than bartacking or the machine may enter the stop-motion state during sewing. On the other hand, if the pressure of the link presser spring is too high, stitches may gather before starting bartacking.
Remove first stop-motion presser adjustment screw ❹ to allow cloth cutting knife arm ❸ to move freely. Then, tilt the sewing machine away from you. Remove screw ❻ in the collar, and screw positioning collar ❺ of the cloth cutting knife in the direction of the arrow. Then, move cloth knife cutting knife shaft ❼ up or down to find out a place where cloth cutting knife ❶ drops the center of throat plate ❷ . Once the cloth cutting knife is properly positioned, lightly press positioning collar ❺ of the cloth cutting knife against the boss of the bed, and firmly tighten screw ❻ in the collar at that position. * Since a cloth cutting knife is not attached to the MBH-180L or -180S, this adjustment is not necessary.	This adjustment greatly affects sharpness and durability of the cloth cutting knife. So, it is quite necessary to perform this adjustment carefully.

(17) Adjusting the lifting amount of the work clamp foot

1. When the work clamp foot is in its lowest position, a clearance of 0.5 mm should be provided between the work clamp foot mounting base and the lifter lever.
2. When the stop-motion bracket is in the highest position of its stroke, a clearance of 0.5 mm should be provided between lifter stopper suspension ❼ and lifter adjusting block ❽.

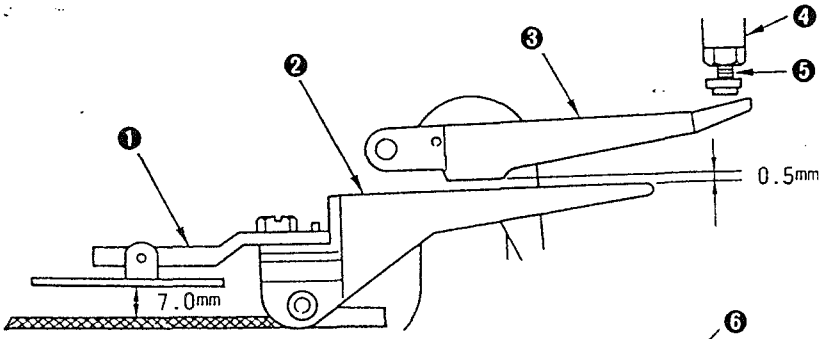


Fig. 52

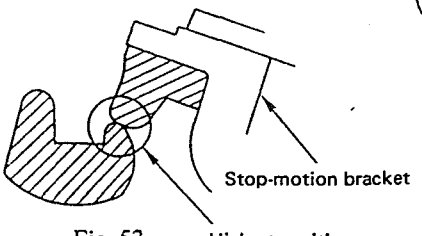


Fig. 53

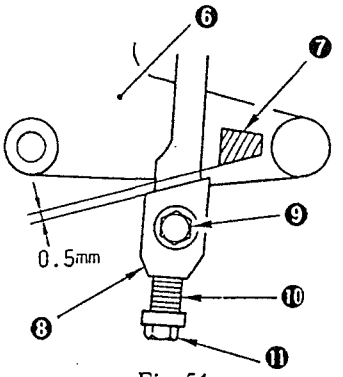


Fig. 54

(18) Adjusting the starting arm and presser tripping bracket

1. A clearance of 1 mm should be provided between the point marked with an asterisk (*) of starting arm ❶ and the point marked with an asterisk (*) of thread trimmer guide arm ❷.
2. Position presser tripping arm ❹ so that a clearance of 0.5 mm is provided between the tripping arm and lifter adjusting block ❺.

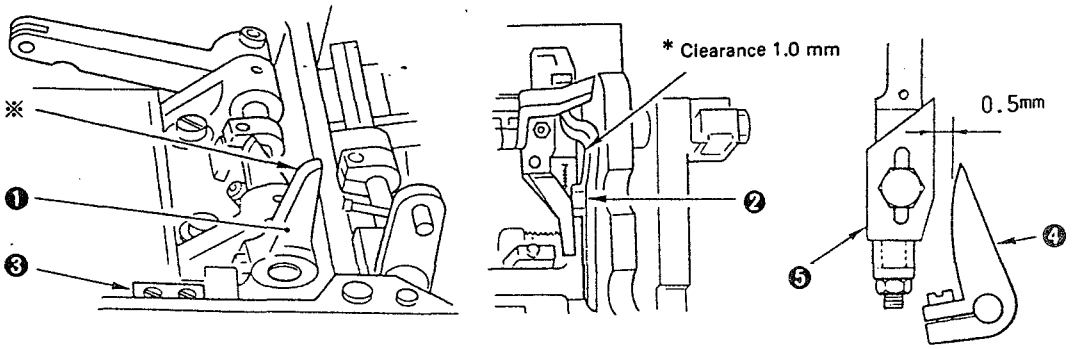
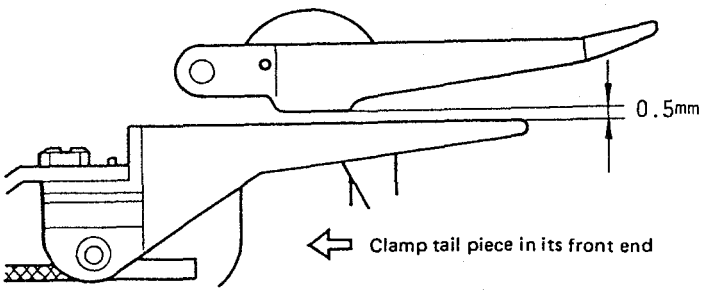


Fig. 55

How to adjust	Results of improper adjustment
1. Depress the foot pedal at the stop-motion position of the sewing machine to make work clamp foot ❶ come down. At this time, adjust the clearance between work clamp foot mounting base ❷ and lifter lever ❸ using adjustment screw ❺ provided with lifter lever stopper ❹ . 2. Then, bring the stop-motion bracket to its highest position as illustrated Fig. 53. Adjust so that a clearance of 0.5 mm is provided between lifter stopper suspension ❼ mounted on cloth cutting knife arm ❻ and lifter adjusting block ❽ . Temporarily tighten screw ❾ in the block, and determine the position of the lifter adjusting block using adjustment screw ❿ . Once the block is correctly positioned, firmly tighten nut ⓫ and adjusting screw ❾ . * For the MBH-180L, the lifting amount of the work clamp foot is 2 mm when the clamp tail piece is in its front end.  	If the clearance between the lifter stopper suspension and the lifter adjusting block is smaller than 0.5 mm, the work clamp foot may fail to go up at the time of stop-motion. If the clearance is larger than 0.5 mm, lifting amount of the work
Determine the position of the starting arm by moving bumper carrier 3 back or forth. Then determine the position of presser tripping bracket ❹ . Tighten the clamping screw to adjust so that a clearance of approximately 0.5 mm is provided between presser tripping bracket ❹ and lifter adjusting block ❺ .	If there is no clearance between the presser tripping bracket and the lifter adjusting block, the work clamp foot may fail to go up. If the clearance between the bracket and the block is too large, a higher pressure will be required to operate the starting pedal.

(19) Adjusting the stop-motion tripping lever

When the bartacking base turns counterclockwise until stop-motion tripping lever ❷ comes in contact with the square projection of stop-motion latch ❸, the overlapping length of the stop-motion tripping lever and the stop-motion latch should be 2.5 to 3 mm as illustrated in Fig. 56.

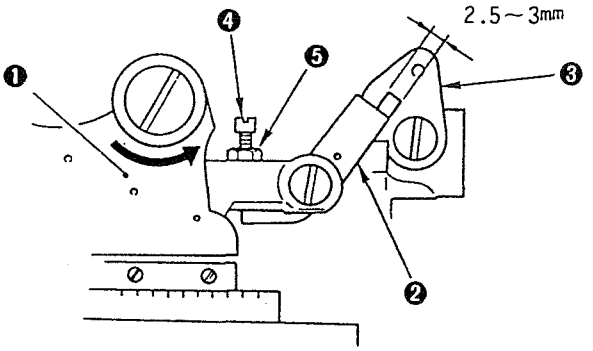


Fig. 56

(20) Adjusting the position of the stop-motion bracket

When the sewing machine is normally in operation, a clearance of 0.05 to 0.1 mm should be provided between driving cam ❶ and stop-motion stopping shaft ❷.

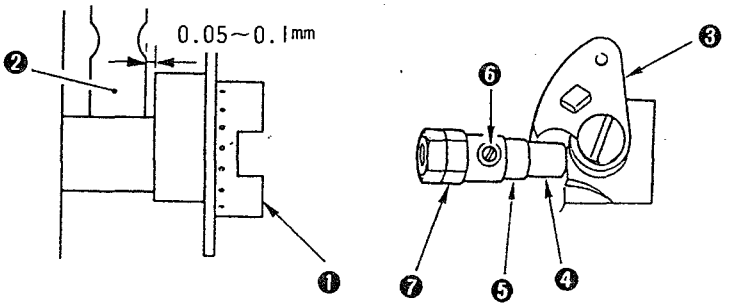


Fig. 57

How to adjust	Results of improper adjustment
Adjust the stop-motion tripping lever by moving stopper screw ❹ of the stop-motion tripping lever up or down. Once the stop-motion tripping lever is properly positioned, securely tighten nut ❺.	If the overlapping length of the stop-motion tripping lever and the stop-motion latch is excessive, the machine may fail to start running for the next sewing. On the contrary, if the overlapping length is insufficient, the machine may keep running without entering the stop-motion state.
The position of stop-motion shaft ❹ is determined by stop-motion latch ❸ and slide bracket ❺. Consequently, the position of stop-motion stopping shaft ❷ is determined. Loosen screw ❻, and adjust the position of stop-motion shaft ❹ using nut ❼. Adjust so that a clearance of 0.05 to 0.1 mm is provided between driving cam ❶ and stop-motion stopping shaft ❷. Now, tighten nut ❼ and screw ❼.	If there is no clearance between the driving cam and the stop-motion stopping shaft, the two components will come contact with each other. As a result, abnormal noise will sound.

(21) Adjusting the stop-motion presser adjustment screw

Adjust the spring pressure of stop-motion presser adjusting spring ❼ using stop-motion presser adjustment screw ❽. Maximize the spring pressure as long as malfunction of the cloth cutting knife does not occur.

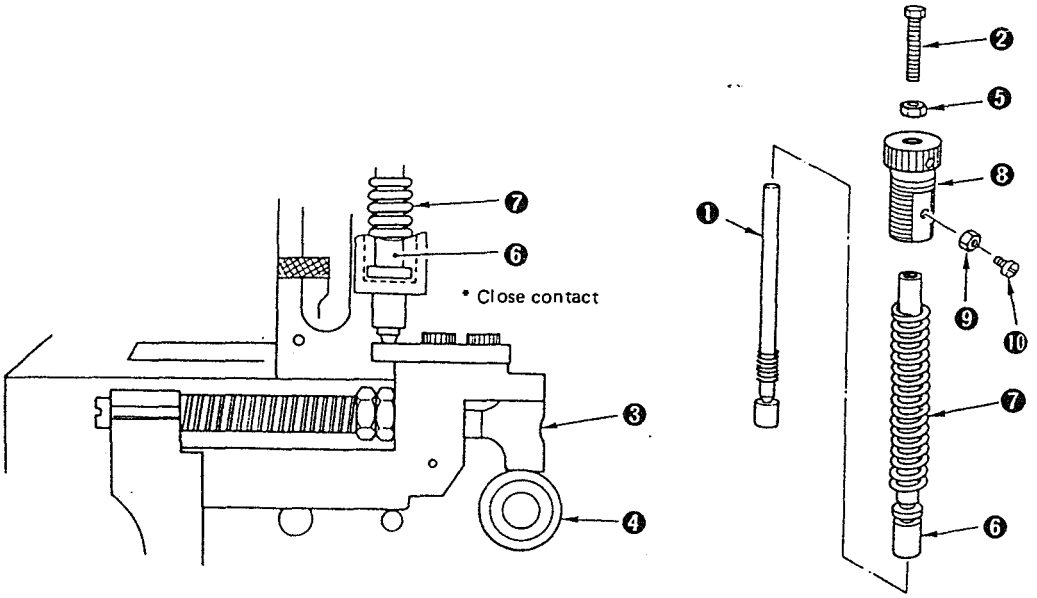


Fig. 58

(22) Adjusting the clutch actuating arm

Adjust the clearance between clutch actuating arm ❶ and clutch roller ❸ attached on clutch lever ❷ so that they lightly come in contact with each other.

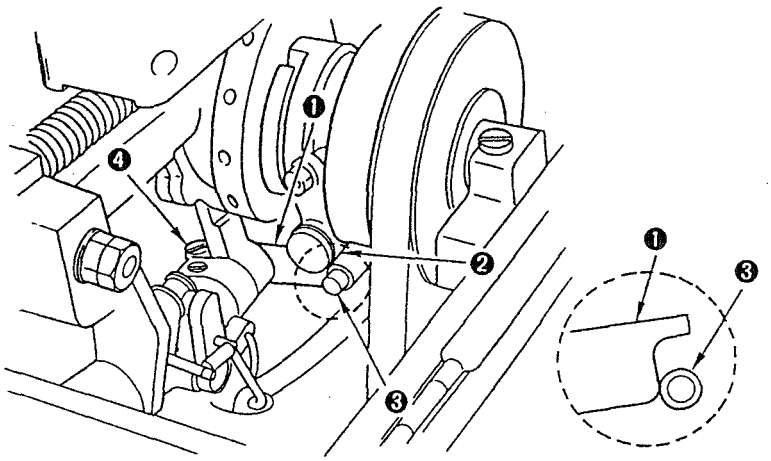
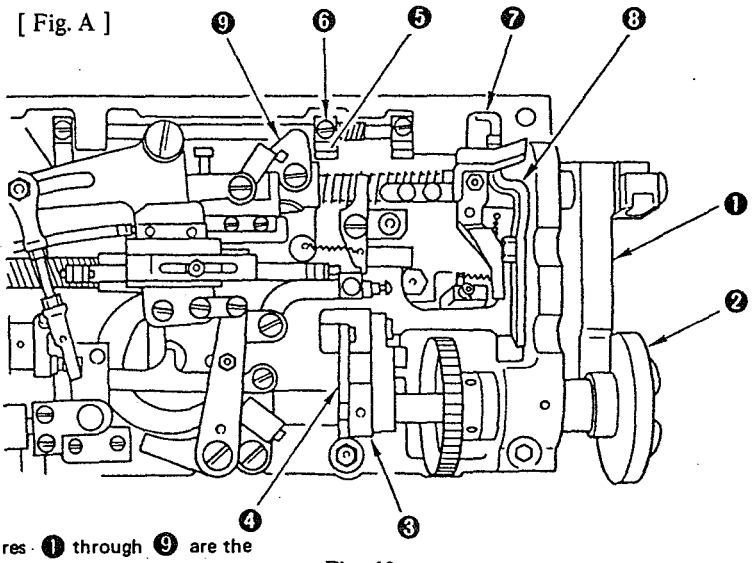


Fig. 59

How to adjust	Results of improper adjustment
Adjust the position of stop-motion presser pin ❶ using stop-motion presser pin adjustment screw ❷. When the machine is in the stop-motion position where stop-motion bracket ❸ rests in the cam groove in driving cam ❹, adjust the position of stop-motion presser pin adjustment screw ❷ so that stop-motion presser pin ❶ has a 0.1 to 0.2 mm vertical play. Once the adjustment screw has been properly positioned, firmly tighten nut ❺. Be sure to confirm that stop-motion presser adjusting rod ❻ come in close contact with the section marked with an asterisk (*). When the spring pressure has been adjusted to an appropriate value, fix stop-motion presser adjustment screw ❽ with screw ❿. Fully tighten screw ❿ first, then loosen it by a half revolution. Now, firmly tighten nut ❾. **(Caution) Never tighten screw ❿ on the crest of thread of stop-motion presser adjustment screw ❽. This may make the adjustment of the spring pressure impossible.**	1. If the spring pressure is too high, the sewing machine will stop during sewing. 2. If screw ❿ is kept fully tightened, stop-motion pressure adjusting rod ❻ will be pushed against the screw. As a result, the rod may fail to move smoothly. < Phenomenon only occurred in the MBH-180 > If the knife fails to go up after the machine finishes buttonholing and the knife drops to cut the material, suppose that the spring pressure is too low. In the case of using a heavy-weight material which the knife may not cut sharp, the knife cannot go up even if the knife drops on the material, increase the spring pressure.
Adjust the position of the clutch actuating arm with screw ❹.	If the clearance between the clutch actuating arm and the clutch roller is too large, the machine may fail to start running even if depressing the foot pedal. If the two components come in excessive contact with each other, abnormal noise may sound when depressing the foot pedal.

(23) Adjusting the thread trimming cam and the thread trimming link

[Fig. A]



Figures ❶ through ❾ are the part drawings of Fig. A.

Fig. 60

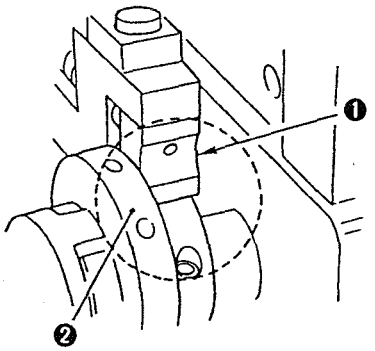


Fig. 61

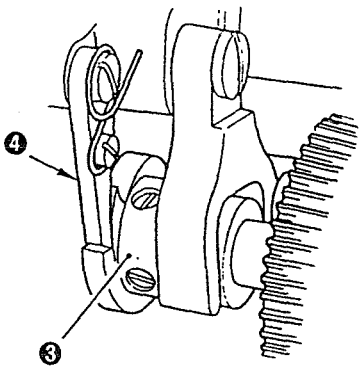


Fig. 62

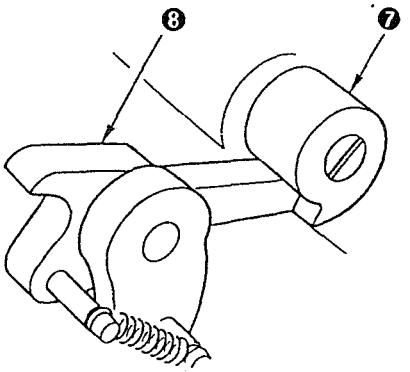


Fig. 63

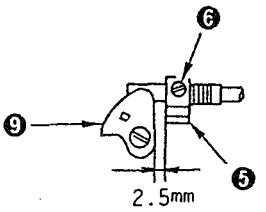


Fig. 64

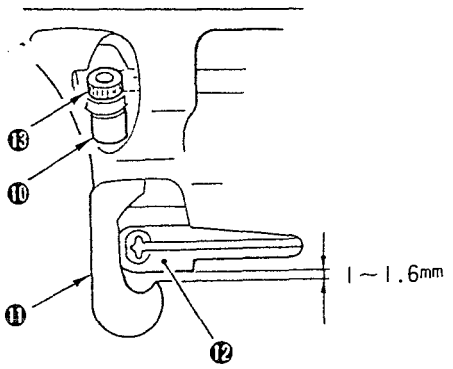


Fig. 65

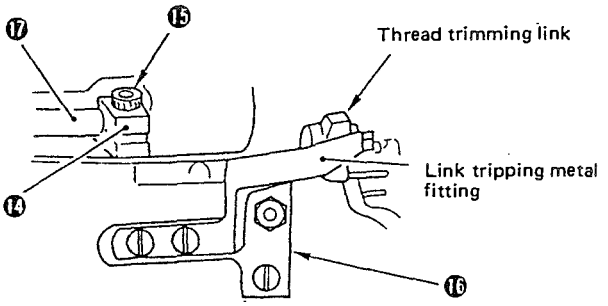


Fig. 66

How to adjust	Results of improper adjustment
Gradually turning the machine from the state immediately before the stop-motion (the state where stop-motion bracket ❶ rests on driving cam ❷ as illustrated in Fig. 61), adjust thread trimming shaft stopper ❺ so that thread trimming link ❽ fits in thread trimming cam ❼ (see Fig. 63) at the same time when positioning lever ❹ of the driving shaft enters the first cut groove of needle bar frame driving cam ❸ (see Fig. 62). At this time, a clearance of 2.5 mm should be provided between thread trimming shaft stopper ❺ and stop-motion suspension ❾ to prevent the two components from coming in contact with each other. (see Fig. 64.) Then, bring thread spreader guide arm ❿ to the center of the installing hole of thread spreader ⓫ , and adjust so that a clearance of approximately 1 to 1.6 mm is provided between the top end of thread spreader ⓫ and the side face of throat plate ⓬ . Now, tighten screw ⓭ in thread spreader guide arm. After the adjustment, bring the machine in the stop-motion state. Then, loosen screw 15 to release thread trimming shaft thrust ⓮ , press sto-motion bracket ❶ until it comes in contact with the main body of the sewing machine to make the machine ready to start. Now, lightly press thread trimming shaft thrust ⓮ against the slant cut plane on stop-motion tripping plate ⓰ , and securely tighten screw ⓯ .	If the timing of thread trimming and the clearance between the thread trimming shaft stopper and the stop-motion suspension are not properly adjusted, the thread trimming mechanism may fail to cut the thread or the length of thread remaining after thread trimming may not be uniform.

(24) Adjusting the re-starting arm (only for the MBH-180)

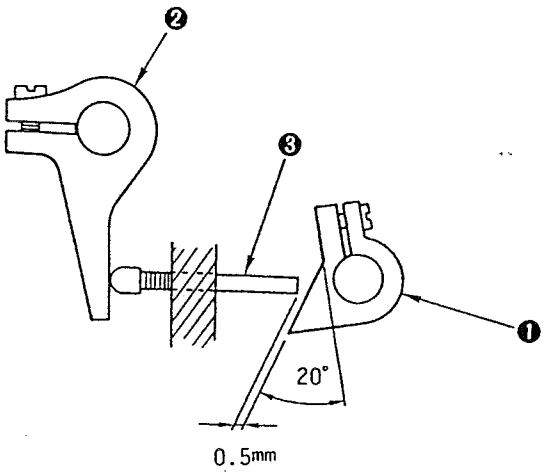


Fig. 67

(25) Adjusting the emergency stop mechanism

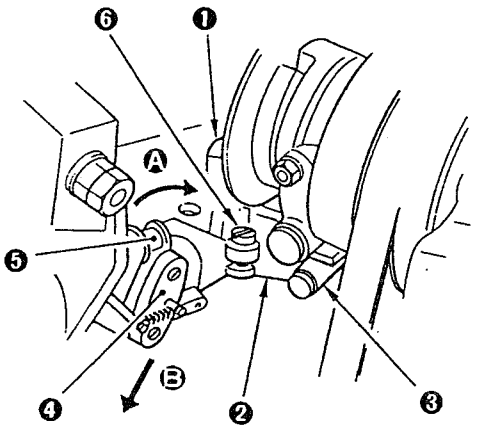


Fig. 68

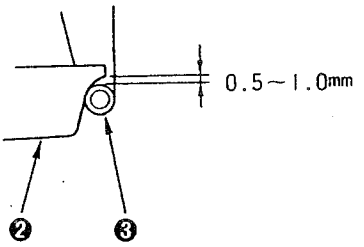


Fig. 69

How to adjust	Results of improper adjustment
When the sewing machine is in operation, attach starting arm ❶ so that the flat section of the arm inclines by approximately 20°. Then tilt the sewing machine away from you while fully depressing the foot pedal. Tilting the sewing machine will lower the foot pedal. So, return the foot pedal to its predetermined position. (Placing a piece of support block will ensure the position of the foot pedal.) Keeping the foot pedal at that position, fix re-starting arm ❶ so that a clearance of approximately 0.5 mm is provided between re-starting arm pin ❸ and re-starting arm ❶ as illustrated in Fig. 67.	If the clearance between the re-starting arm pin and the re-starting arm is 0 or less, stop-motion failure may result. If the clearance is larger than 0.5 mm, the clutch actuating arm may fail to properly return to its home position when re-starting the sewing machine, which means that the sewing machine will fail to start.
Rotating angle in the direction of arrow Ⓐ is determined by the position of driving cam brake ❶. Adjust the position of driving cam brake ❶ so that the top end of clutch actuating arm ❷ is 0.5 to 1.0 mm away from clutch roller ❸ when pulling L metal fitting ❹ in the direction of arrow Ⓑ, and fix the driving cam brake, with screw ❻, at the position where it comes in contact with the driving cam. At this time, confirm that slide shaft arm ❺ will not return to its home position without forcibly keeping it at the adjusted position. * The MBH-180S/-180L is not equipped with an emergency stop mechanism.	If the clearance between the top end of clutch actuating arm and the clutch roller is 0 or less, the clutch actuating arm may break. In this case, a clearance may be provided between the friction clutch and the driving pulley. As a result, the machine cannot run at high speed. Furthermore, larger clutch noise may sound. If the clearance is 1.0 mm or larger, the clutch cannot be disengaged. As a result, the driving pulley may become hot.

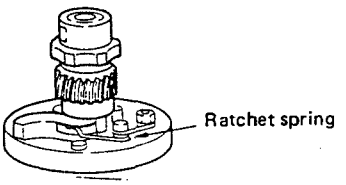
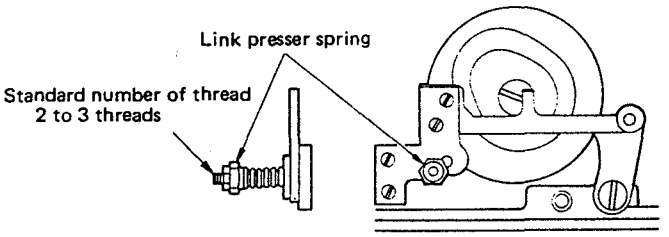
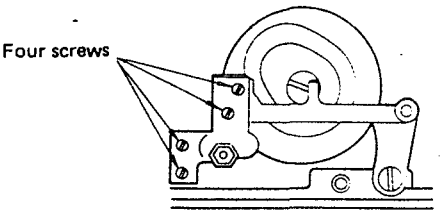
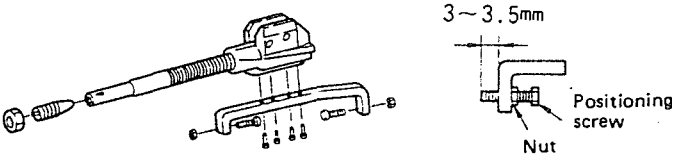
< Advice in point >

ACF-182, MBH-180S

< Phenomenon >

The sewing machine enters stop-motion during sewing. (Malfunction)

< Cause and corrective measures >

Cause	
1. Ratchet spring comes off.	Tilt the machine head, and check whether the ratchet spring has been out of the predetermined position or whether the spring has broken. 
2. Ratchet spring loses its elasticity.	Tilt the machine head, and check whether the ratchet spring has lost its elasticity by pulling the spring with your fingers.
3. The link presser spring pressure is insufficient.	Tighten the nut in the link presser spring. The standard position of the nut is obtained when two or three threads appear from the end face of the nut. The nut can be tightened to an extent where as many as five or six threads appear from the end face of the nut. 
4. The change-over lever has been installed at an improper posi–tion.	Loosen the four screws illustrated in the sketch below, and change the installing position of the change-over lever. The installing position cannot be numerically specified. However, the change-over lever is correctly positioned as long as the machine does not malfunction when making the machine run idle by 30 rotations after tightening the screws at appropriate positions. 
5. The timing to start the first bartacking is too early. (The positioning screw excessi-vely protrudes.)	Adjust the positioning screw illustrated on the left-hand side of the sketch below. The standard position of the positioning screw is obtained when the top end of the screw protrudes from the end face of the positioning plate approximately 3 to 3.5 mm. Do not set the above-stated protruding amount to 2 mm or less. 

3. TROUBLES AND CORRECTIVE MEASURES

Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
The work clamp foot fails to go up.	No clearance is provided between the lifter lever and the work clamp foot mounting base.		Adjust so that a clearance of 0.5 mm is provided between the work clamp foot mounting base and the lifter lever with the work clamp foot lowered. (See pages 24 and 25.)
	No clearance is provided between the lifter stopper suspension and the lifter adjusting block.		Adjust so that a clearance of 0.5 mm is provided between the lifter stopper suspension and the lifter adjusting block when the stop-motion bracket is in its highest position. (See pages 24 and 25.)
	No clearance is provided between the presser tripping bracket and the lifter adjusting block.		Adjust so that a clearance of 0.5 mm is provided between the presser tripping bracket and the lifter adjusting block. (See pages 24 and 25.)
	Lifter stopper suspension or the adjusting block has worn out.	The screw has loosened.	Replace the worn-out components. If the screw has loosened, re-tighten the screw.
The work clamp foot fails to fully go up.	The clearance between the lifter lever and the work clamp foot mounting base is too large.		See pages 24 and 25.
	The clearance between the lifter stopper suspension and the lifter adjusting block is too large.		See pages 24 and 25.
	The pressure of the stop-motion presser adjusting spring is insufficient.		Adjust the pressure of the spring using the stop-motion presser adjusting screw. (See pages 28 and 29.)
The knife fails to cut the cloth. (This trouble occurs only in the MBH-180.)	The knife does not cut sharp.		Replace the knife.
	The knife dropping position is improper.		Adjust so that the cloth cutting knife drops just the center of the knife groove on the throat plate. (See pages 22 and 23.)
	Stop-motion failure		Refer to the description of the "stop-motion failure" in "Troubles and corrective measures".
	The knife groove on the throat plate is defective.		Replace the throat plate.

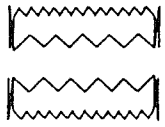
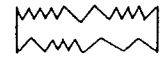
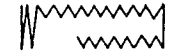
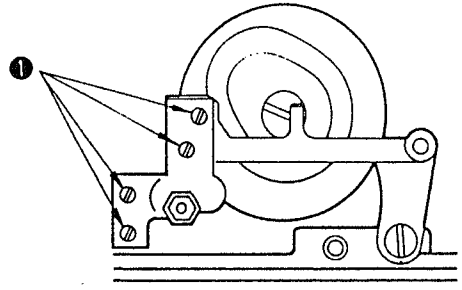
Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
Stitch skipping occurs at the parallel section of a buttonhole.	The clearance between the looper and the needle is too large.	The needle-to-looper timing is defective.	See pages 2 through 7.
	Take-up thread guide has been improperly adjusted.		Standard position of the take-up thread guide is as follows : Slack of the thread is gradually decreased by the boss of the descending needle bar lifting arm and the slack of the thread is completely eliminated when the lowest position of the needle bar is reached. If raising the take-up thread guide above the standard position, tension applied to the thread will be increased and the loop will be smaller. On the other hand, if lowering the guide below the standard position, tension applied to the thread will be decreased and the loop will be larger. Since the position of the take-up thread guide affects the thread tension controlled by the thread tension mechanism, find an appropriate position of the take-up thread guide in accordance with the material and thread to be used.
			If stitch skipping has occurred, check first the following items. 1. Whether the needle is bent or whether the tip of the needle is blunt. 2. Whether the needle is properly installed. 3. Whether the machine head is properly threaded. 4. Whether the needle entry point with respect to the needle hole in the throat plate is correct. 5. Whether the thread tension controlled by the thread tension controller is proper, and whether the take-up thread guide is correctly positioned. 6. Whether the position of the work clamp foot with respect to the needle entry point is correct.
	Shape of the needle hole in the throat plate is defective. (It has scratches, etc.)		Replace the throat plate.
	The clearance between the work clamp foot is too large.		Adjust so that the clearance is decreased properly.
	Play between the looper driving cam and the triangular cam connection is excessive.		Decrease the play.

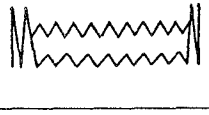
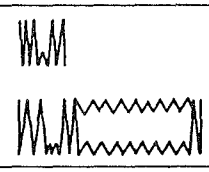
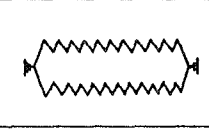
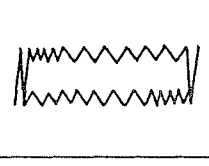
Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
Stitch skipping occurs at the bartack section of a buttonhole. The last stitch at the sewing end skips. (These troubles occur in the MBH-180/ -180S.)	Needle sway during bartacking has been improperly adjusted.		See pages 16 and 17.
	Thread tension at the bartack section has been improperly adjusted.		Properly adjust the thread tension.
	Clearance between the back of the looper No. 1 and the needle is too large.		Adjust so that a clearance of 0 to 0.5 mm between the needle and the looper to allow the needle to drop behind the looper without coming in contact with the looper. (See pages 4 and 5.)
	The change-over lever overlaps the bartacking ratchet too deeply during bartacking.		See pages 20 and 21.
	The engaging position of the needle bar driving gear is improper.		See pages 8 and 9.
The machine fails to start even by fully depressing the foot pedal.	The starting arm is improperly positioned.		See pages 24 and 25.
	The stop-motion suspension and sliding thrust are not properly positioned.		See pages 26 and 27.
	The screw in the sliding thrust has loosened.		Re-tighten the screw.
	The clearance between the clutch actuating arm and the clutch lever roller is too large.		Adjust so that the clutch actuating arm and the clutch lever roller lightly come in contact with each other. (See pages 28 and 29.)
	The stop-motion tripping lever and the stop-motion suspension have been improperly adjusted.		When the bartacking base turns counterclockwise until stop-motion tripping lever comes in contact with the square projection of stop-motion suspension, adjust the overlapping length of the stop-motion tripping lever and the stop-motion suspension to 2.5 to 3 mm. (See pages 26 and 27.)
	The stop-motion tripping plate is pushed against the thread trimming shaft thrust.		Press the stop-motion bracket until it comes in contact with the bed, and lightly press thread trimming shaft thrust against the slant cut plane on stop-motion tripping plate. (See pages 30 and 31.)
	The stop-motion suspension is engaged with the thread trimming shaft stopper.		Adjust so that a clearance of 2.5 mm is provided between the stop-motion suspension and the thread trimming shaft stopper. (See pages 30 and 31.)

* Check the cause of stitch skipping at the bartack section after taking the corrective measures against stitch skipping at the parallel section of a buttonhole.

Touble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
A heavy load is required to depress the starting pedal.	The starting arm and presser tripping bracket have been improperly adjusted.		See pages 24 and 25.
	Clearance between the clutch actuating arm and the clutch lever roller have been improperly adjusted.		See pages 28 and 29.
	The stop-motion presser pin has been improperly adjusted.		When the machine is in the stop-motion position where the stop-motion bracket rests in the cam groove in the driving cam, adjust the position of the stop-motion presser pin adjustment screw so that stop-motion presser pin has a 0.1 to 0.2 mm vertical play. (See pages 28 and 29.)
Stop-motion failure	The belt is not sufficiently tensed.		Adjust the belt tension properly.
	Clearance between the clutch actuating arm and the clutch lever roller is too small.		See pages 28 and 29.
	Pressure of the stop-motion presser spring is too high.		Decrease the pressure of the stop-motion presser spring. (See pages 28 and 29.)
	Bartacking brake pressure is too high.		Adjust the pressure of the bartacking brake during bartacking so that the bartacking groove cam follows the rotation of the worm. (See pages 18 and 19.)
	Clearance provided, when the machine enters the stop-motion state, between the stop-motion bracket and the driving cam has been improperly adjusted.		See pages 16 and 17.
	The stop-motion presser pin has been improperly adjusted.		See pages 28 and 29.
	The cloth cutting knife does not cut sharp. (This phenomenon is observed only in the MBH-180.)		Replace the knife.

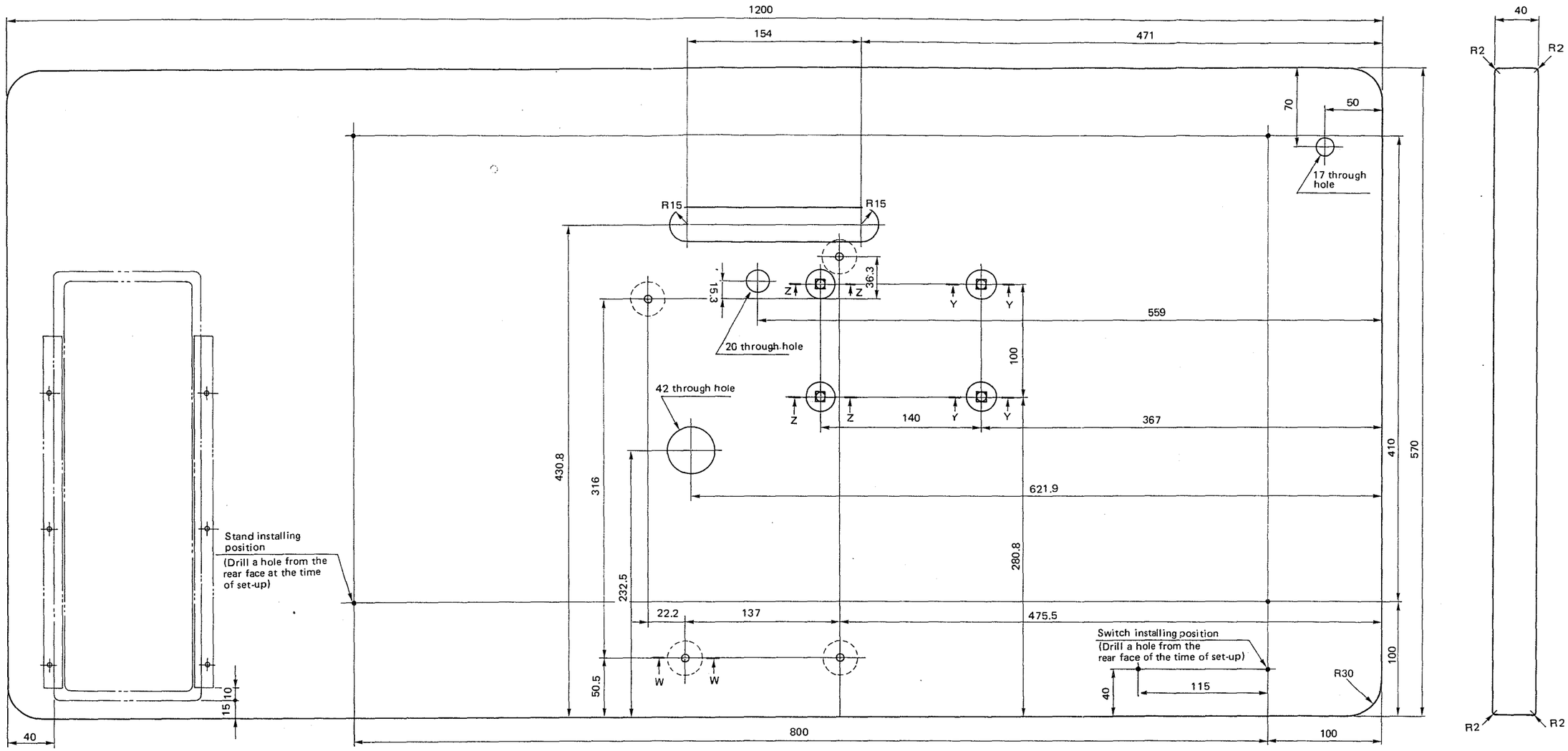
Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
Thread trimmer fails to cut the thread.	The thread trimmer fails to cut sharp.	The shape of the thread spreader is defective.	Replace the thread trimming knife and the thread spreader.
	The thread trimming cam and thread trimming link have not been properly adjusted.		See pages 30 and 31.
	The thread spreader has been improperly adjusted.	The performance of the thread spreader is incorrect.	
	The pressure of the stop-motion presser adjusting spring is insufficient.		Increase the pressure of the stop-motion spring. (See pages 28 and 29.)
	The last stitch at the sewing end skips.		Refer to the description of the "stitch skipping" in "Troubles and corrective measures".

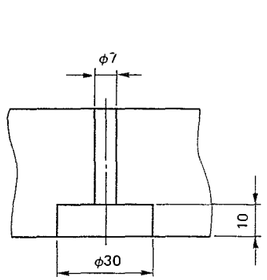
Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
Stitch failure			
	The feed converting shaft has been improperly adjusted.		See pages 12 and 13.
	The performance of the feed mechanism is defective.		Adjust the spring pressure of the feed brake properly. (Tighten the nut by approximately two threads.) If the material is not fed at all, replace the feed mechanism. (See pages 10 and 11.)
	The length of thread remaining on the needle is too short at the sewing start.		The length of thread remaining on the needle at the sewing start is determined by the position of the knife arm connecting link mounted on the knife arm connecting guide. Move the knife arm connecting link to the right to lengthen the thread remaining on the needle, or to the left to shorten it.
	The positioning screw has been improperly adjusted.		See pages 20 and 21.
	The spring of the feed brake is insufficient.		Increase the spring pressure. (See pages 10 and 11.)
	Installing position of the change-over lever is improper.		Loosen four screws ❶, and change the installing position of the change-over lever properly. The installing position cannot be numerically specified. However, the change-over lever is correctly positioned as long as the machine does not malfunction when making the machine run idle by 30 rotations after tightening screws ❶ at appropriate positions. 

Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
	T-link stopper has been improperly adjusted.		See pages 14 and 15.
	Link presser spring pressure has been improperly adjusted.		Maximize the spring pressure as long as the stitches do not gather before starting bartacking. (See pages 22 and 23.)
	Needle sway during bartacking has been improperly adjusted.		See pages 16 and 17.
	Link presser spring pressure has been improperly adjusted. If the nut is excessively tightened (the screw is tightened to an extent that seven threads or more of the screw appear from the end face of the nut), stitch pitch may be excessively shortened immediately before starting bartacking.		See pages 22 and 23.
Loose stitches	Take-up thread guide has been improperly adjusted.		Raising the take-up thread lever will increase the tension applied to the thread, or lowering the lever will decrease it.
	Thread tension controlled by the tension controller is insufficient.		Increase the thread tension.
	The thread tension release arm has been improperly adjusted.		The tension disk floats while the machine is performing bartacking to prevent the thread from being tensed. Adjust, when the sewing machine is sewing the parallel sections of a buttonhole, so that a clearance of 0.5 to 0.8 mm is provided between thread tension release pin and thread tension release arm. (See pages 8 and 9.)
	Needle hole in the throat plate has scratches.		Replace the throat plate.

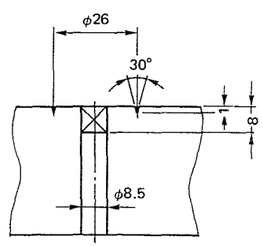
Trouble	Cause (1)	Cause (2)	Inspecting sequence and adjusting procedure
Needle breakage	The performance of the thread spreader is defective.		See pages 30 and 31.
	The looper components have been improperly adjusted.		See pages 2 through 7.
Thread breakage	The thread used has been spliced.		Replace the thread.
	The needle hole in the throat plate has burrs.		Deburr the needle hole in the throat plate.
	Thread tension is too high.		Decrease the thread tension.
Cloth cutting knife fails to drop properly. (Only in the MBH-180)	The knife dropping position has been improperly adjusted.		Adjust so that the cloth cutting knife drops just the center of the knife slit on the throat plate. (See pages 22 and 23.)
	Needle sway during bartacking has been improperly adjusted.		See pages 16 and 17.

(3) Longitudinal type table

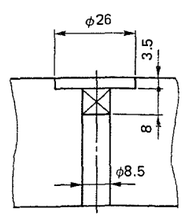




Section WW

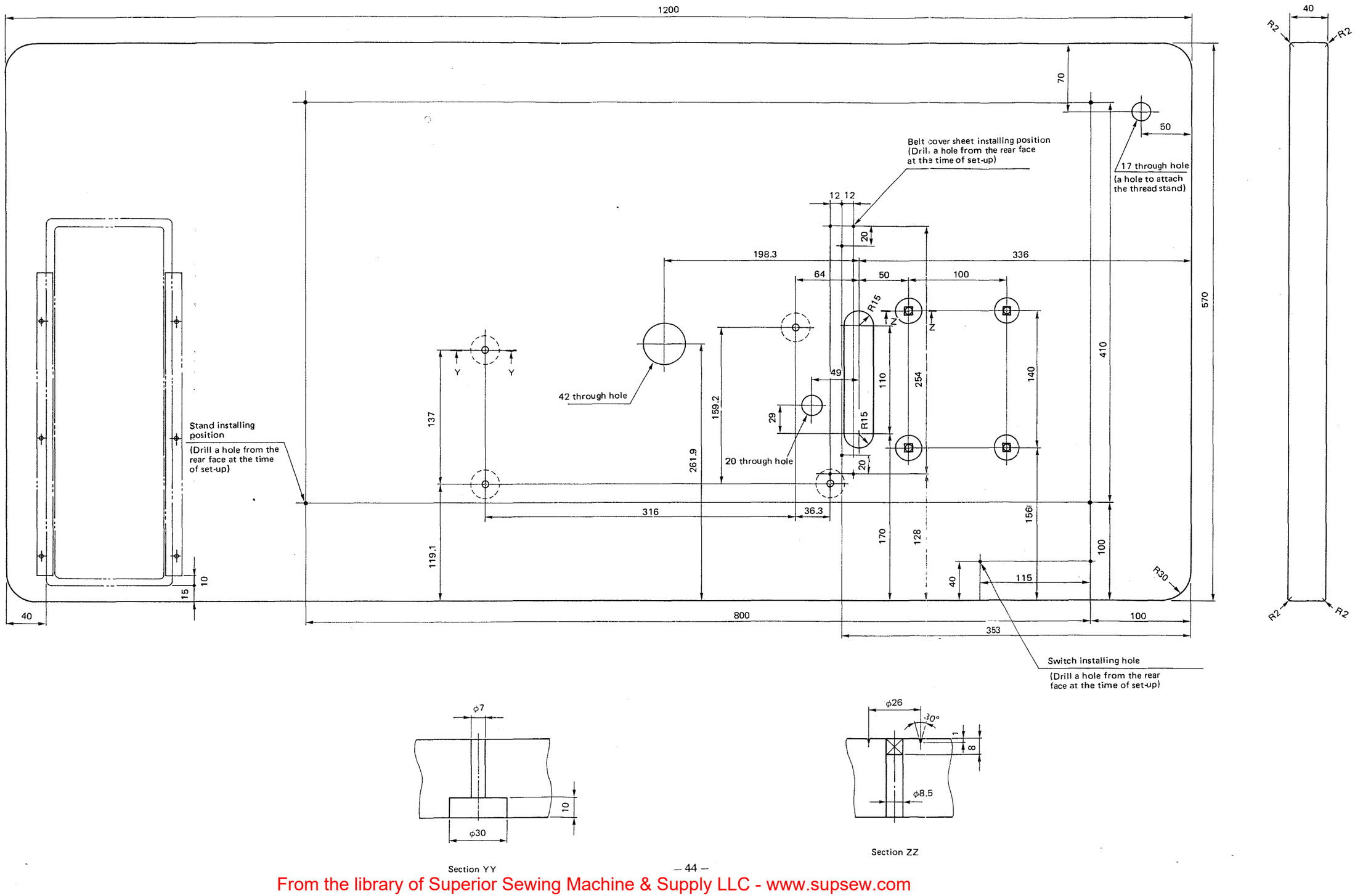


Section YY



Section ZZ

(2) Lateral type table

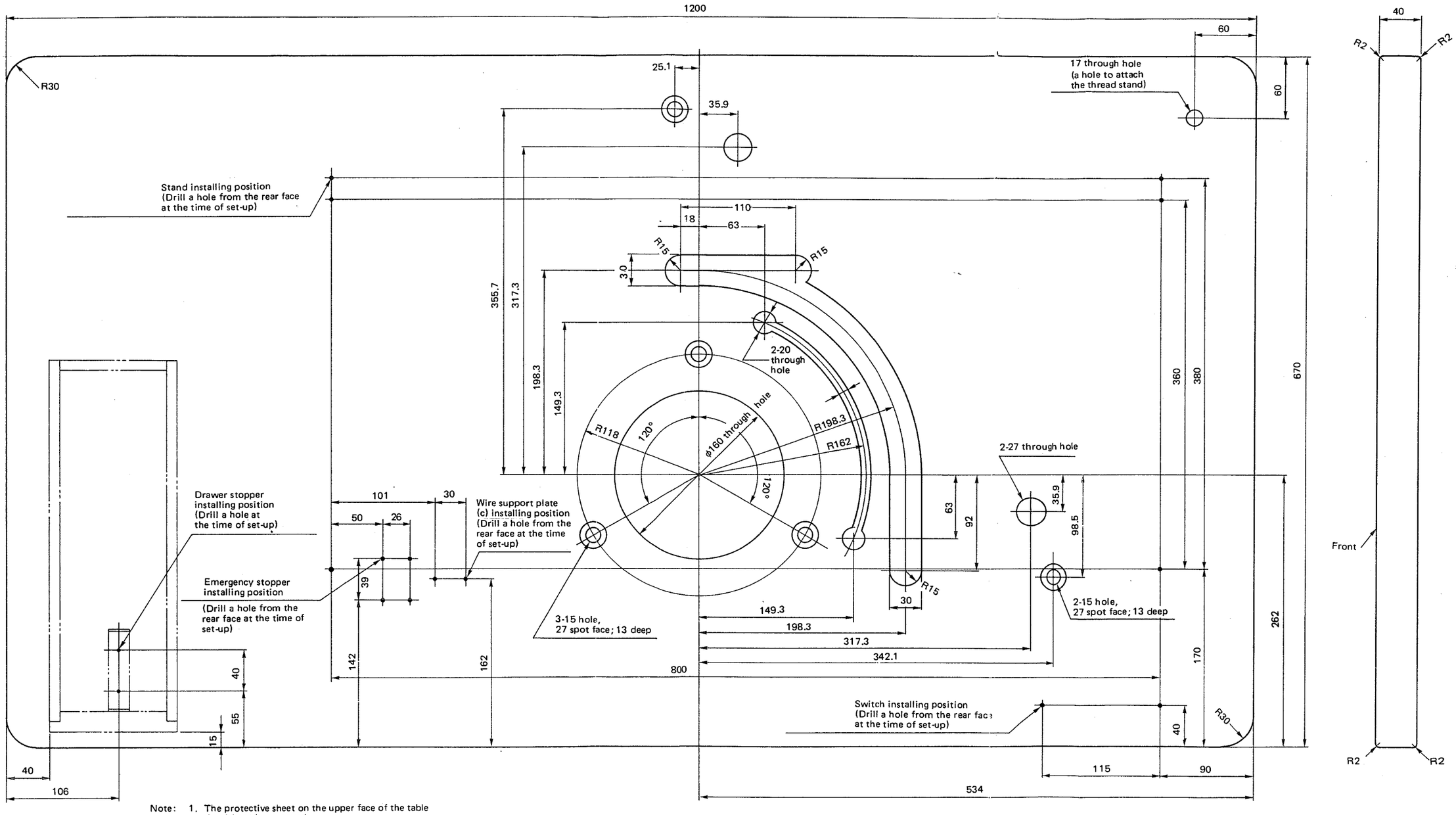


Section YY

Section ZZ

4. Drawing of the table

(1) Rotary table



Note: 1. The protective sheet on the upper face of the table should not be removed.

2. The position for installing the T stand shall be 360 x 170 and for installing the Z stand should be 380 x 170.

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Please do not hesitate to contact our distributors or agents in your area for further information when necessary.

* The description covered in this instruction manual is subject to change for improvement of the commodity without notice.
* This instruction manual is edited and printed in accordance with the product specifications as of November, 1991.