

2-Needle, Needle-feed, Lockstitch Machine

LH-3528

2-Needle, Needle-feed, Lockstitch Machine with an Automatic Thread Trimmer

LH-3528-7

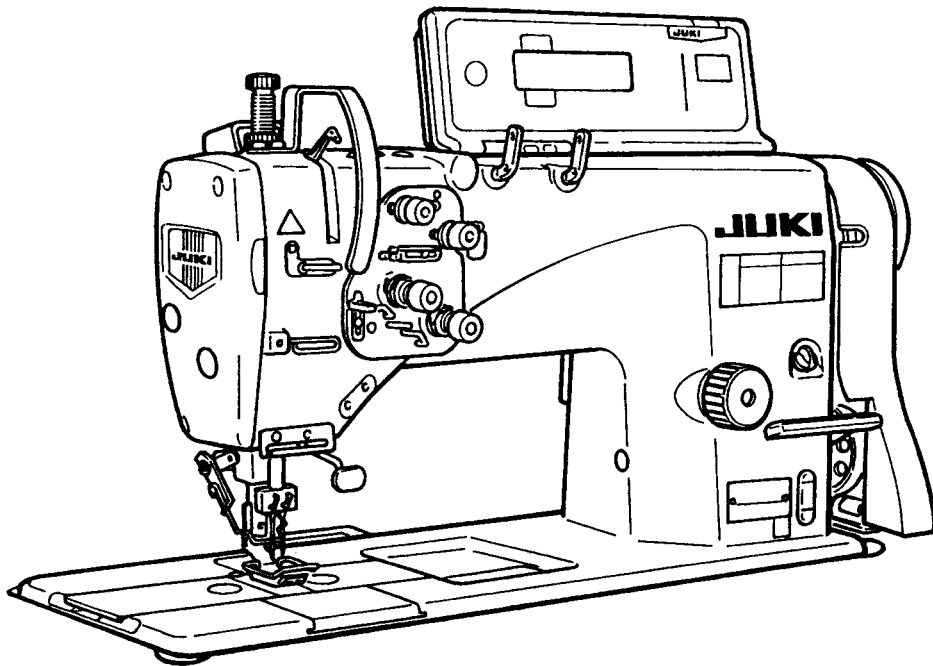
2-Needle, Needle-feed, Lockstitch Machine with an Organized Split Needle Bar

LH-3568

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with an Automatic Thread Trimmer

LH-3568-7

ENGINEER'S MANUAL



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.

It is advisable to use the relevant Instruction Manual and Parts List together with this Engineer's Manual, and also the manuals of SC-500 and SC-910 as well as the instruction manuals of SC-500, SC-910, and EC-10B when carrying out the maintenance of these machines.

This manual gives the "Standard Adjustment" on the former section under which the most basic adjustment value is described and on the latter section 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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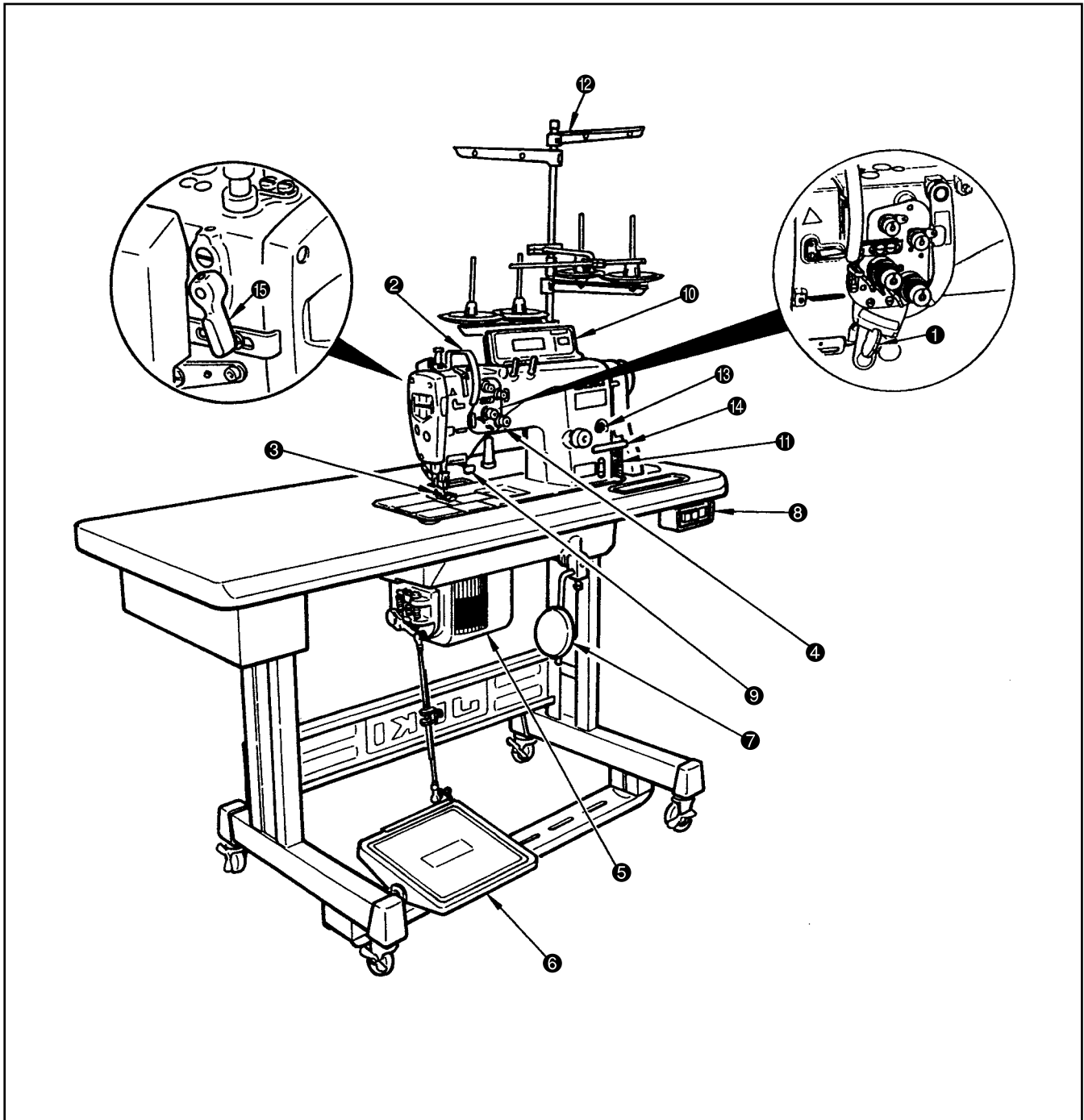
1. Specifications

No.	Model name Item	Application			
		LH-3528	LH-3528-7 (with automatic thread trimmer)	LH-3568 (with incorporating corner stitching)	LH-3568-7 (with automatic thread trimmer incorporating corner stitching)
1	Name	2-needle lock stitch machine			
2	Application	For light, medium-and heavy-weight materials			
		Specification S: Standard (for medium heavy-weight materials) Specification A: Light-weight materials Specification F: Foundation Specification G: Jeans	Specification S: Standard (for medium heavy-weight materials), Specification G: Jeans		
3	Max. sewing speed	3000rpm			
4	Max. stitch length	Forward/reverse feed: 5mm			
5	Thread take-up	Sliding thread take-up			
6	Needle bar stroke	33.4mm			
7	Hook	Small hook			
8	Separately driven needle stop mechanism	Not provided		Provided	
9	Needle	Specification A, S, G DP x 5 #9 to #21, Specification F : *1	Specification S, G : DP x 5 #14 to #21		
10	Gauge size inch (mm)	3/32" to 1-1/2" 2.4 to 38.1mm	1/8" to 1-1/4" (3.2 to 31.8mm)	1/8" to 3/4" (3.2 to 19.1mm)	1/8" to 3/4" (3.2 to 19.1mm)
11	Lift of presser foot	Presser lifter lever 5.5mm, knee lifter 12mm	Presser lifter lever 5.5mm, knee lifter 12mm (Provided with a wiper 9mm)	Presser lifter lever 5.5mm, knee lifter 12mm	Presser lifter lever 5.5mm, knee lifter 12mm (Provided with a wiper 9mm)
12	Wiper	Not provided	Provided	Not provided	Provided
13	Auto-reverse feed	Not provided *2	Provided	Not provided	Provided
14	Lubrication	JUKI NEW Defrix oil No. 1 or JUKI MACHINE OIL No. 7 (equivalent to ISO VG7)			
15	Grease	JUKI grease A (Part No. : 40006323)			
16	External dimensions of the head section	517mm x 178mm x 247mm (Arm height from top face of the base)			
17	Weight of head	43kg	45kg	43kg	45kg
18	Power consumption	SC-500 : 500VA, SC-910 : 650VA, EC-10B : 400VA			
19	Working temperature/humidity	Temperature :5° to 35°C, Humidity : 35% to 85% (no condensation)			
20	Supply voltage/frequency	Rated voltage ± 10%, 50/60Hz			
21	Audible sound level (3000rpm)	Approx. 87.5dBA		Approx. 89dBA	

*1: 134SES SERV7 Nm65 (Equivalent to #9)

*2: Auto-reverse feed setup function provided to Specification F only

2. Name of each component



① Separately driven needle changeover lever
(LH-3568, LH-3568-7 only)

② Thread take-up cover

③ Finger guard

④ Thread tension controller

⑤ Control box

⑥ Pedal

⑦ Knee patch

⑧ Power switch

⑨ Reverse feed switch lever

⑩ Operation panel

⑪ Bobbin winder

⑫ Thread stand

⑬ Oil supply opening

⑭ Reverse feed control lever

⑮ Hand lifter lever

3. Model numbering system

(1) LH-3528 2-Needle, Needle-feed, Lockstitch Machine (without a thread trimmer)

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21
L H 3 5 2 8 □ □ □ □ △ ◇ □ □ □ △ △ △ — □ □

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the sewing specification
A	Specification for light-weight materials
F	Specification for foundation
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

9	Needle gauge classification				
	mm (inch)/Specifications for sewing	A	F	S	G
B	3.2 (1/8)	○	○	—	—
D	4.8 (3/16)	○	○	○	○
E	5.6 (7/32)	—	○	—	—
F	6.4 (1/4)	◎	◎	◎	◎
G	7.1 (9/32)	—	○	—	—
H	7.9 (5/16)	—	○	○	—
K	9.5 (3/8)	—	—	○	—
P	22.2 (7/8)	○	—	—	—
Q	25.4 (1)	○	—	○	—

* Standard marked by ◎

10	Classification for feed
A	Needle feed
B	Bottom feed

* Feed classification B shall be applicable to all the specifications A of the sewing specification classification. Classification F shall be applicable only to the stitch classifications B, D, and F.

11 to 12	Classification for wiper and auto-reverse feed
00	Not provided
0B	Without wiper, with auto-reverse feed

* 0B is applicable to F (Specification for foundation) only.
 * The clutch motor cannot be used when 0B is selected.

13	Classification for attachment application
S	Standard
T	Intended for taping

* T is applicable to F (Specification for foundation) only.

14 to 18	Classification of automatic presser lifter (AK)
Space	Not provided
AK135	Provided

* AK plus is applicable to F (Specification for foundation) only.
 * The clutch motor cannot be used when AK plus is selected.

20	Place of destination
A	Standard (WEEE applicable)
G	China (used in China)

21	Accessories type
A	Standard
B	CE applicable
G	China (used in China)

(2) LH-3528-7 2-Needle, Needle-feed, Lockstitch Machine with an Automatic Thread Trimmer

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
L H 3 5 2 8 **7 W B**

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the sewing specification
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

9	Needle gauge classification		
	mm (inch)	S	G
D	4.8 (3/16)	○	○
F	6.4 (1/4)	◎	◎
K	9.5 (3/8)	○	—

* Standard marked by ◎

11 to 12	Classification for wiper and auto-reverse feed
WB	With wiper, with auto-reverse feed

13 to 17	Classification of automatic presser lifter (AK)
Space	Not provided
AK135	Provided

19	Place of destination
A	Standard (WEEE applicable)
G	China (used in China)

20	Accessories type
A	Standard
B	CE applicable
G	China (used in China)

(3) LH-3568 2-Needle, Needle-feed, Lockstitch Machine with an Organized Split Needle Bar (Without a thread trimmer)

1 2 3 4 5 6 7 8 9 10 11 12
L H 3 5 6 8 —

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the sewing specification
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

9	Needle gauge classification		
	mm (inch)/Specifications for sewing	S	G
D	4.8 (3/16)	○	○
E	5.6 (7/32)	○	—
F	6.4 (1/4)	⊙	⊙
K	9.5 (3/8)	○	—

* Standard marked by ⊙

11	Place of destination
A	Standard (WEEE applicable)
G	China (used in China)

12	Accessories type
A	Standard
B	CE applicable
G	China (used in China)

(4) LH-3568-7 2-Needle, Needle-feed, Lockstitch Machine with an Organized Split Needle Bar with an Automatic Thread Trimmer

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20
L H 3 5 6 8 **7 W B**

7	Classification for the head specifications
S	Semi-dry head

8	Classification for the sewing specification
S	Specification for medium heavy-weight materials
G	Jeans, specification for heavy-weight materials

9	Needle gauge classification		
	mm (inch)	S	G
D	4.8 (3/16)	○	○
E	5.6 (7/32)	○	—
F	6.4 (1/4)	⊙	⊙

* Standard marked by ⊙

11 to 12	Classification for wiper and auto-reverse feed
WB	With wiper, with auto-reverse feed

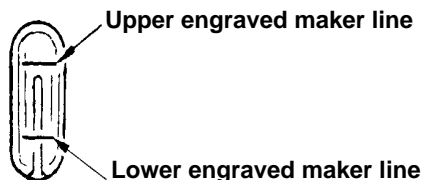
13 to 17	Classification of automatic presser lifter (AK)
Space	Not provided
AK135	Provided

19	Place of destination
A	Standard (WEEE applicable)
G	China (used in China)

20	Accessories type
A	Standard
B	CE applicable
G	China (used in China)

4. Special notes for safe operation

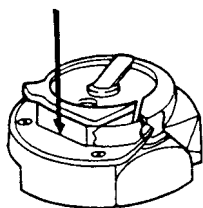
- (1) For the LH-3528 and LH-3568 models of sewing machine without a thread trimmer, the throat plate, feed dog and presser foot developed for the LH-3100 are applicable. Furthermore, commercially available thread trimmer, throat plate, feed dog and presser foot can also be used with them.
- (2) Adjust the position of the motor so that the V belt is tensed to the extent where it slackens by approximately 10 mm when the center of the belt is pressed by hand.
- (3) The machine oil (JUKI New Deflex Oil No.1 or JUKI MACHINE OIL No. 7) shall be supplemented so that the level gauge remains in the range between the upper and lower engraved marker lines of the oil tank.



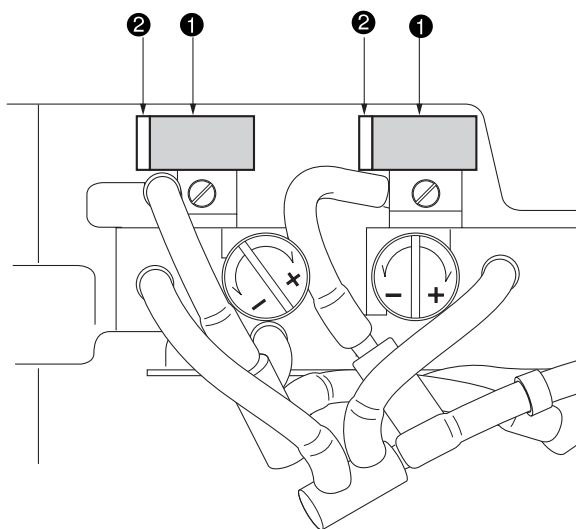
- (4) When you operate your machine for the first time after the set-up or after an extended period of disuse, apply a few drops of oil to the portions indicated by the arrow.

(Caution) Never lubricate inside of the face plate section. (No lubrication is required because a grease lubrication system is adopted.)

o Hook race surface (left and right)



o Hook shaft base

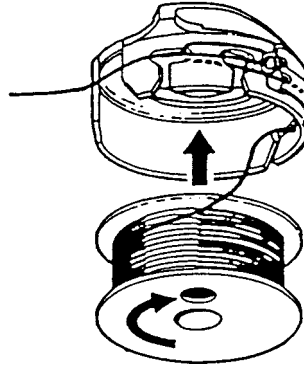
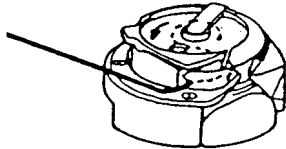


* Apply a lubricant to Gears ① and Felt ② that is located beside the gears.

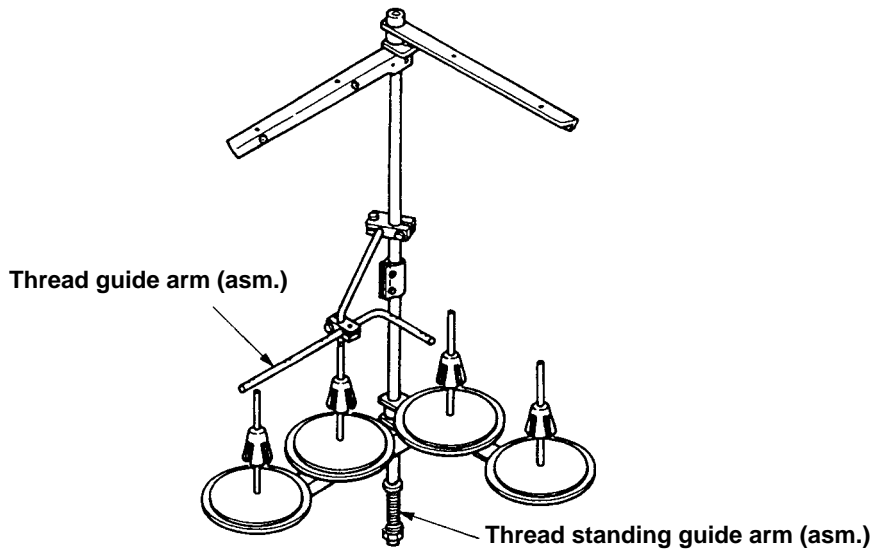
- (5) Hook differs with the type of sewing machine, i.e., the sewing machine with/without a thread trimmer. Be sure to use a hook that is exclusively designed for the sewing machine head. For the LH-3528 and LH-3568 models of sewing machine without a thread trimmer, commercially available hooks can be used.
- (6) How to pass the bobbin thread (The bobbin thread winding direction is indicated by the arrow.)

- o LH-3528 Latch hook
- o LH-3528-7 Latch hook with a thread trimmer

- o LH-3568 Hook for an separately driven needle
- o LH-3568-7 Hook with a thread trimmer and an separately driven needle



- (7) When synthetic threads are used, use the thread guide arm (asm.) for the thread stand (asm.) if the thread flaps during sewing.



MEMO

5. Standard adjustment

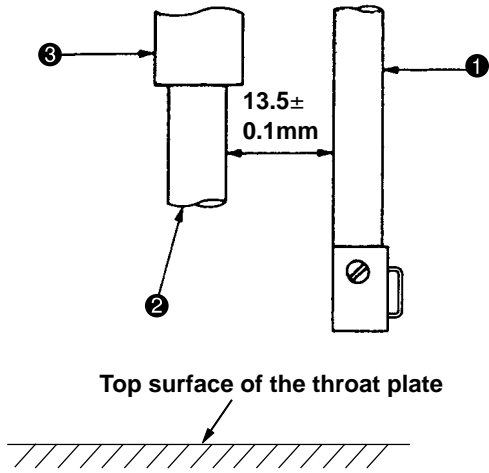
(1) Needle bar and feed dog

Standard Adjustment

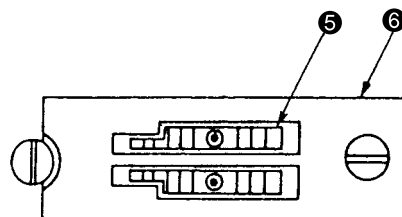
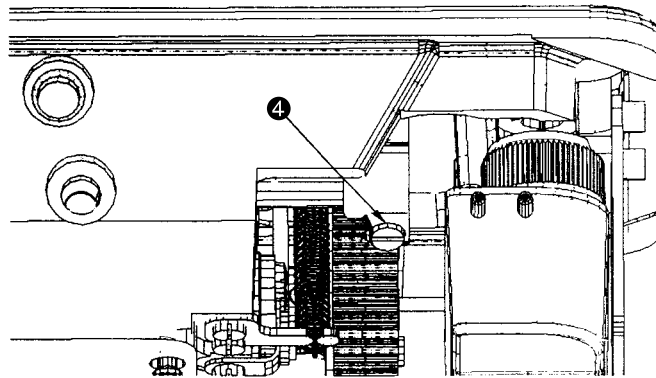
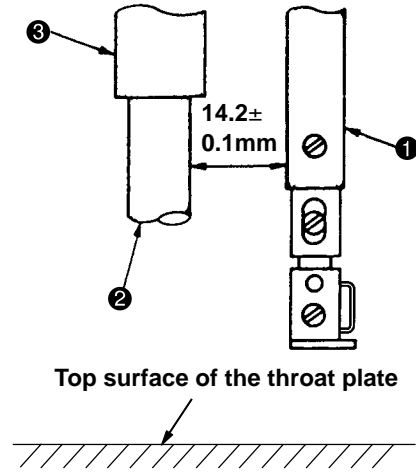
1) Initial position of the needle bar

Conditions

- o The needle bar is in the lowest dead point.
- o Feed amount : Minimum
- o LH-3528, LH-3528-7



- o LH-3568, LH-3568-7



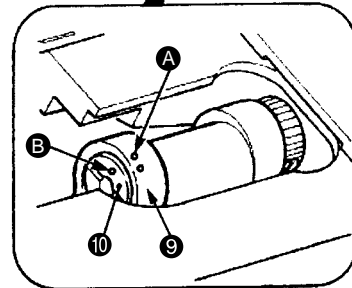
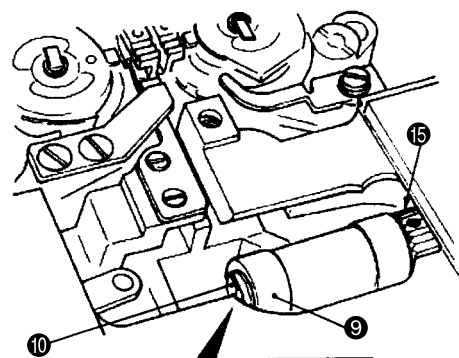
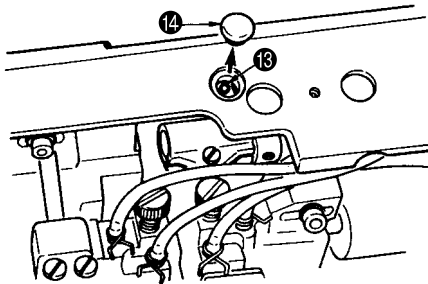
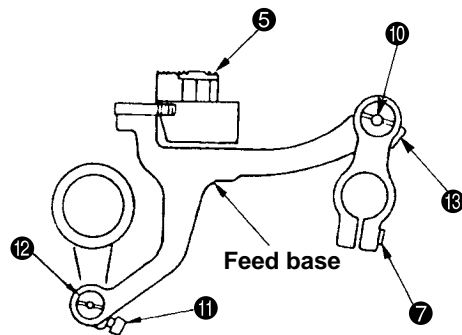
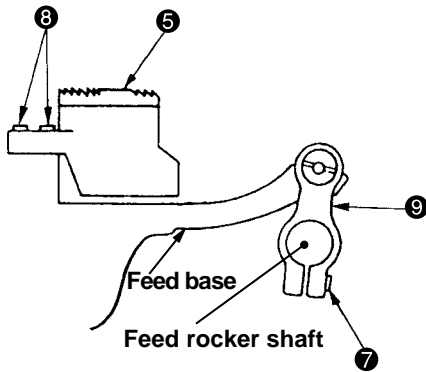
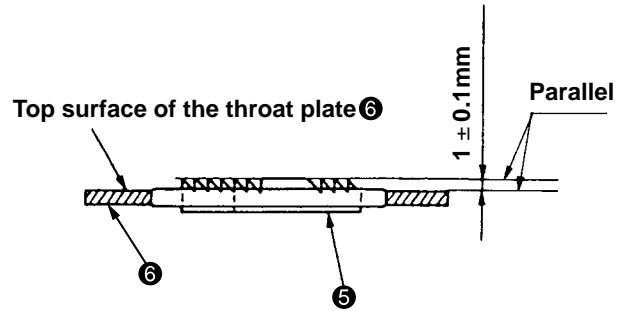
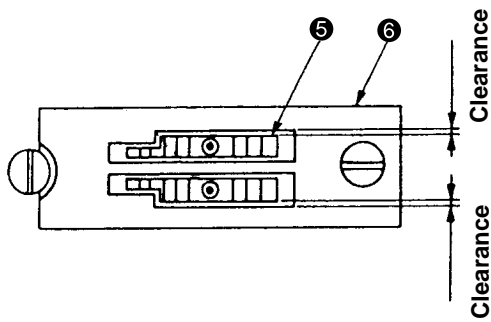
Adjustment Procedure	Results of Improper Adjustment
<p>1) Initial position of the needle bar</p> <ol style="list-style-type: none"> 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the handwheel to bring needle bar ❶ to the lowest dead point. 3. Loosen the setscrew ❷ of the horizontal feed arm. 4. Tighten the setscrew ❷ based on the specified dimension that is the distance between the needle bar ❶ and inside of the presser bar ❸. <p>(Caution) 1. The distance between the needle bar ❶ and the presser bar ❸ shall be defined in the section from the lower end of the presser bar ❸ to that of the presser bar metal ❹.</p> <ol style="list-style-type: none"> 2. After adjustments, the needle location may be changed in relation to the slot of the feed dog ❺. 	<ul style="list-style-type: none"> o The feed dog ❺ comes in contact with the throat plate ❻. o Stitch skipping or needle breakage will be caused. o Thread trimming failure will be caused.

Standard Adjustment

2) Adjustment of the right and left feed dog positions, height, and gradient

Conditions

- o Feed amount : Minimum
- o When the feed dog ⑤ is in the highest position of its stroke, it should rise $1 \pm 0.1\text{mm}$ from the top surface of the throat plate ⑥.



Adjustment Procedure	Results of Improper Adjustment
<p>2) Adjustment of the right and left feed dog positions, height, and gradient</p> <p>o Right and left feed dog positions</p> <ol style="list-style-type: none"> In order to make the right and left clearances be uniformly balanced between the hole of the throat plate ⑥ and the feed dog ⑤, loosen the feed base arm setscrew ⑦ to move the feed base arm ⑨ in the axial direction. After adjustments, tighten the setscrew ⑦. If the above-mentioned adjustments are insufficient, the feed dog ⑤ may have been installed on the feed base inadequately. Loosen the setscrew ⑧ to attain parallelism between the feed dog ⑤ and the feed base. Tighten the setscrew ⑧. and make right and left position adjustments of the feed dog ⑤ again as per 1. above. <p>(Caution) When the gauge is replaced, make right/left adjustments of the feed dog ⑤.</p> <p>o Feed dog height</p> <ol style="list-style-type: none"> Minimize the feed amount by rotating the feed adjusting dial. Turn the hand wheel so that the feed dog ⑤ is positioned to secure its maximum protrusion from the throat plate ⑥. Loosen the setscrew ⑪ and rotate the vertical feed link shaft ⑫ to adjust the feed dog ⑤ to $1 \pm 0.1\text{mm}$ from the upper face of the throat plate ⑥. After adjustments, tighten the setscrew ⑪. <p>(Caution) 1. After adjustments, the needle location may be changed in relation to the hole of the feed dog ⑤.</p> <p>o Feed dog gradient</p> <ol style="list-style-type: none"> Remove the cap ⑭ of the bed side face and loosen the feed bar shaft setscrew ⑬. Turn the roulette section ⑮ to adjust the gradient. The standard gradient of the feed dog ⑤ is defined where the engraved marking dot A of the feed base arm ⑨ coincides with the engraved marking dot B of the feed base arm shaft ⑩. 	<p>When the feed dog is positioned too high:</p> <ul style="list-style-type: none"> The feed dog ⑤ will come in contact with the throat plate ⑥. The stitch length will be larger than the value indicated by the scale on the stitch dial. It can be a cause of thread trimming deficiency. <p>When the feed dog is positioned too low:</p> <ul style="list-style-type: none"> The pitches of stitches become smaller than the graduations of the feed adjusting dial. The moving knife will come in contact with the feed dog ⑤ at the time of thread trimming. This can be a cause of trimmer malfunction.

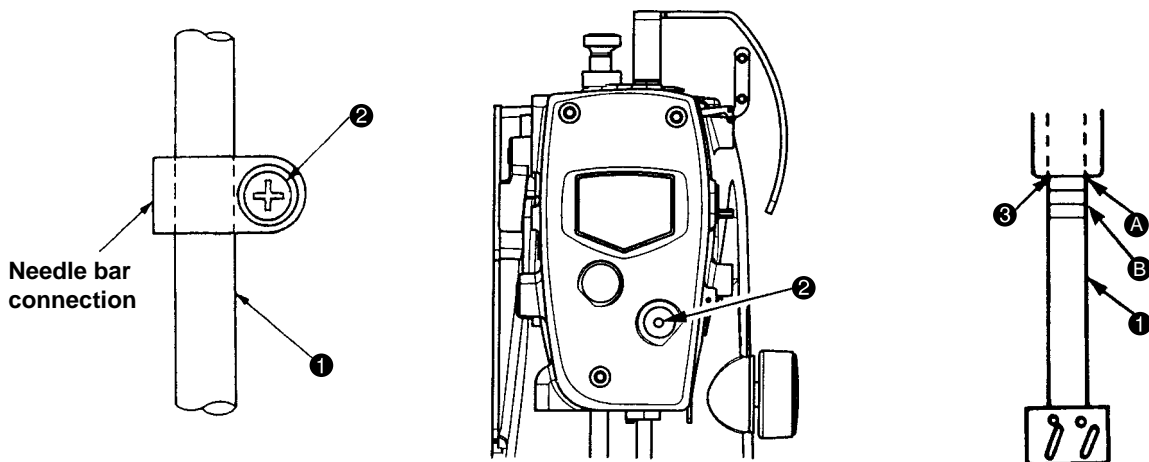
Standard Adjustment

3) Needle bar height

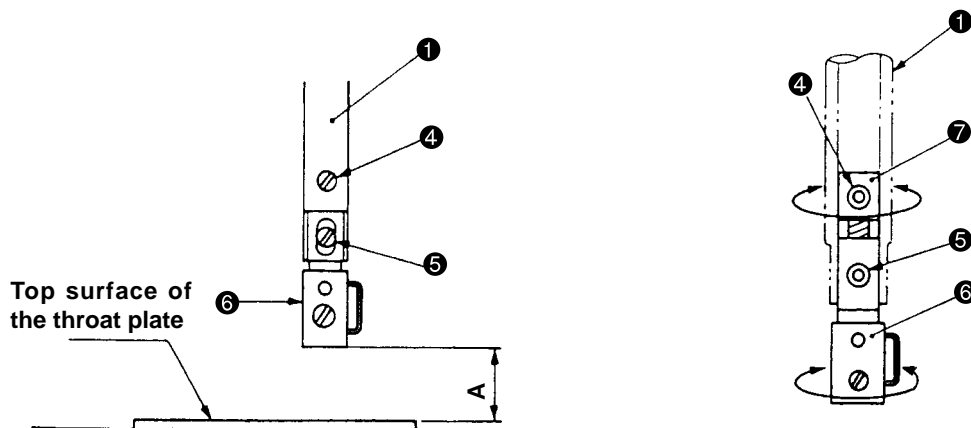
Conditions

- o Needle bar should be in its lowest dead point.
- o Feed amount: Minimum

- o LH-3528, S, A, G and F type
LH-3528-7, S and G type



- o LH-3568, S and G type
LH-3568-7, S and G type



	LH-3568	LH-3568-7
Dimension A	13.9±0.15mm	13.4±0.15mm

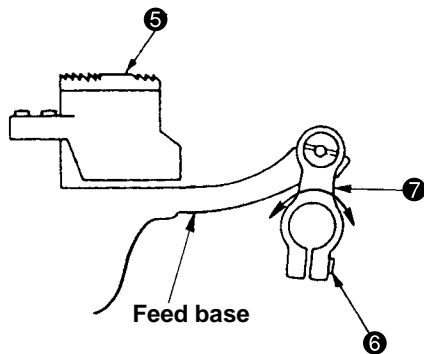
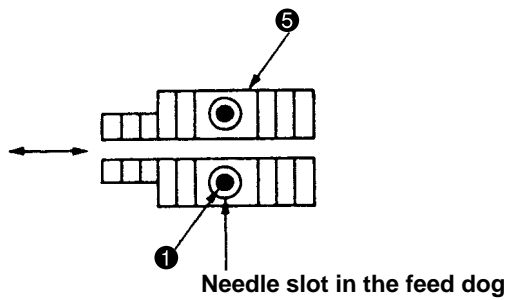
Adjustment Procedure	Results of Improper Adjustment
<p>o LH-3528, S, A, G, F, LH-3528-7, S, G</p> <ol style="list-style-type: none"> 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the hand wheel to bring needle bar ❶ to the lowest dead point. 3. Loosen the needle bar connecting setscrew ❷. 4. Let the upper engraved marker line ❸ of the needle bar ❶ coincide with the lower end face of the needle bar rocking base ❹ and tighten the needle bar connecting setscrew ❷. <p>(When the DPX17 is used) While the DPX17 is used, the engraved marking line ❺ (second line from the bottom) of the needle bar ❶ shall be made to coincide with the lowest face of the needle bar rocking base ❹.</p> <p>o LH-3568, S, G, LH-3568-7, S, G</p> <p>The needle bar ❶ height is determined by the height of the needle clamp ❻.</p> <p>o Needle clamp ❻ goes up or comes down by 0.6 mm in one revolution. Remove the screw ❽ and turn the needle clamp ❻ in the direction of the arrow.</p> <p>o Half a rotation of the spring holder ❼ corresponds to the perpendicular movement of 0.3mm. Remove the screws ❹ and ❺ and pull out the needle clamp ❻ from the needle bar ❶. Rotate the spring holder ❼ in the direction of the arrow.</p> <ol style="list-style-type: none"> 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the hand wheel so that the needle bar ❶ is positioned at the lower needle dead point. 3. Rotate the needle clamp ❻ or the spring holder ❼ or both to secure Dimension A of the table. Since then, tighten the screws ❹ and ❺. <p>(Caution) 1. After the adjustment, the needle entry point in the needle slot in the feed dog may change.</p> <p>2. If needle clamp ❻ cannot be turned smoothly, loosen screw ❹.</p> <p>(When the DPX17 is used) When the DPX17 is used, replace the needle clamps ❻ (right and left). In regard to the Part Number for each gauge size, refer to 10.-(3), (4): Table of gauge parts classified by models.</p>	<p>o Change in height of the needle bar ❶ may result in stitch skipping or thread breakage.</p>

Standard Adjustment

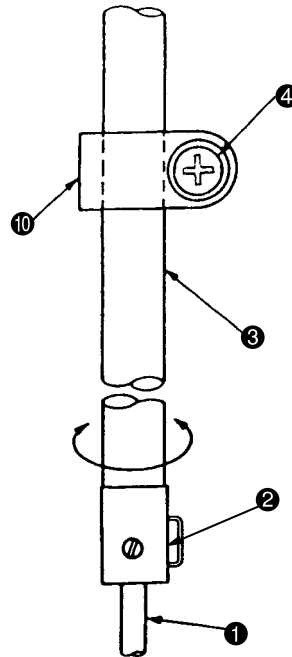
4) Needle entry

Conditions

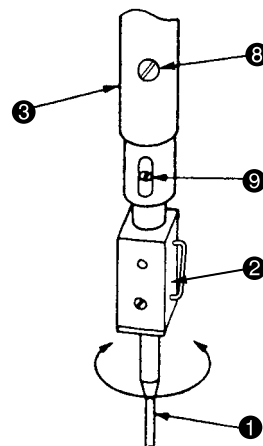
- o Needle bar should be in the lowest dead point.
- o Feed amount: Minimum
- o The needle ① should enter the center of the needle slot in the feed dog ⑤.



- o LH-3528
LH-3528-7



- o LH-3568
LH-3568-7



Adjustment Procedure	Results of Improper Adjustment
<p>o LH-3528, LH-3528-7</p> <ol style="list-style-type: none"> 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the handwheel to bring needle bar ③ to the lowest dead point. 3. Loosen the setscrew ④ of the needle bar connection ⑩. 4. Turn the needle bar ③ in the direction of the arrow to adjust so that the needle ① enters the center of the needle slot in the feed dog ⑤. After the adjustment, tighten the screw ④. 5. If needle ① is longitudinally dislocated in the needle slot in the feed dog ⑤, loosen clamping screw ⑥ in feed rocker and adjust the longitudinal position of the needle by turning feed base arm ⑦ in the direction of the arrow. After the adjustment, tighten screw ⑥. <p>(Caution) 1. Do not change the needle bar ③ height. 2. Do not loosen needle clamp ②.</p>	<ul style="list-style-type: none"> o Stitch skipping and thread breakage will be caused. o Poorly tensed seam will result. o When the feed dog ⑤ has elongated needle slots (2.2mm to 3.2mm), the needle thread will be loosened if the needles enter the far end of the respective elongated slots viewed from the operator. <p>* If needle entry is performed on the operator side at the time of thread trimming, this can be a cause of failure in thread trimming.</p>
<p>o LH-3568, LH-3568-7</p> <ol style="list-style-type: none"> 1. Minimize the feed amount by rotating the feed adjusting dial. 2. Turn the handwheel to bring needle bar ③ to the lowest dead point. 3. Loosen clamping screws ⑧ and ⑨. 4. Turn the needle clamp ② so that the needle ① enters the center of the needle slot in the feed dog ⑤. After adjustments, tighten the tightening screws ⑧ and ⑨. 5. If the needle ① seems to be displaced forward or backward in the slot of the feed dog ⑤, loosen the feed bar arm tightening screw ⑥ to rotate the feed base arm ⑦. After adjustments, tighten the feed bar arm tightening screw ⑥. <p>(Caution) 1. Needle clamp ② can be turned in the clearance provided between screw ⑨ and the rightmost and leftmost edges on the slot in the needle bar ③.</p>	

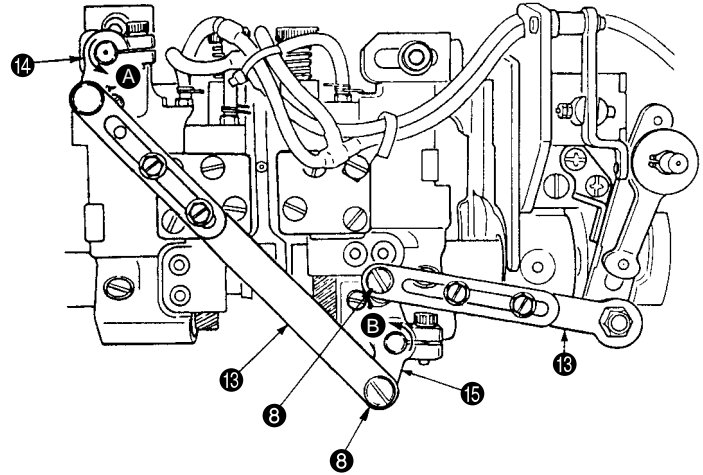
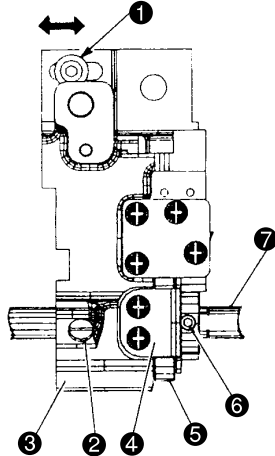
(2) Timing between the needle and the hook

Standard Adjustment

- 1) Lift of the needle bar
- 2) Clearance between the needle and the blade point of the hook
- 3) Position of the needle and the blade point of the hook

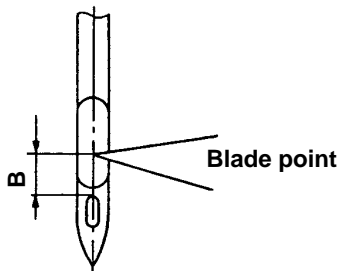
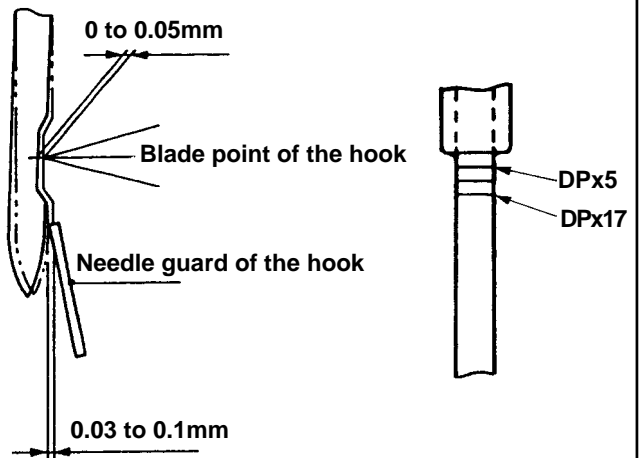
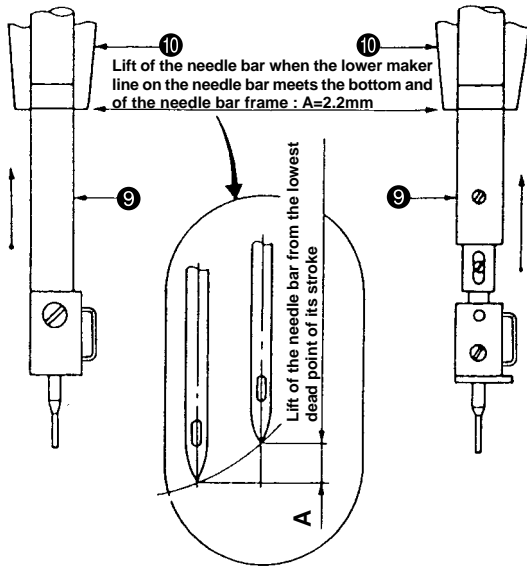
Condition

- o The needle bar ⑨ ascends from the lowest dead point of its stroke.
- o Fed amount (stitch length)
 - : 2.5mm (For G type, it should be set at 3.5mm)
 - (For F type, it should be set at 2mm)



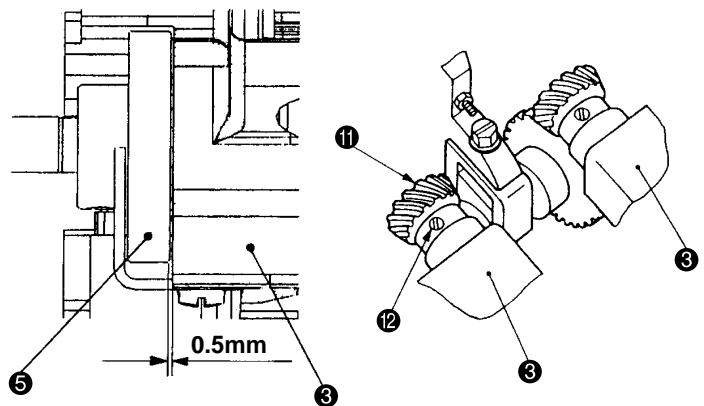
o LH-3528
LH-3528-7

o LH-3568
LH-3568-7



Center of the needle aligns with the blade point of the hook.

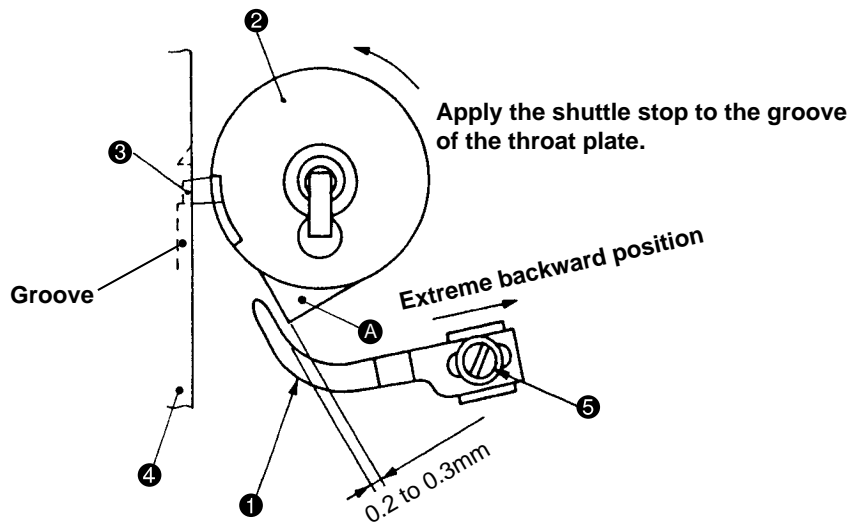
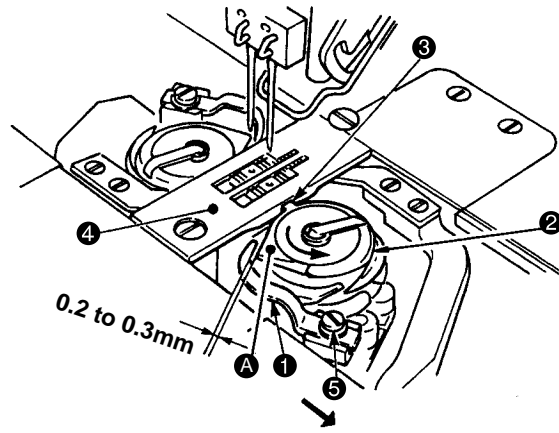
Application	A (mm)	B (mm)
S.G.F	2.2	1.2



Adjustment Procedure	Results of Improper Adjustment
<p>1) List of the needle bar</p> <p>2) Clearance between the needle and the blade point of the hook</p> <p>o To adjust the clearance between the needle and the blade point of the hook and the needle gauge</p> <ol style="list-style-type: none"> 1. For the sewing machine provided with a thread trimmer, remove the hinge screw ⑧ of the connector link (Asm.) ⑬. 2. Loosen the setscrews ① and ② of the hook shaft base and also the setscrews ⑥ (2 pcs.) of the lower shaft gear ⑤. At that time, never remove the first setscrew (fastened to the flat section of the lower shaft ⑦) out of the setscrews ⑥. The amount of screw loosening shall be such that the first setscrew is not disengaged from the flat section of the lower shaft ⑦ when the lower shaft gear ⑤ is turned by hand. 3. For the sewing machine of which sewing specification is S, or A, set the stitch dial at 2.5 on the scale. For the sewing machine of which sewing specification is G, set the stitch dial at 3.5 on the scale. For the sewing machine of which sewing specification is F, set the stitch dial at 2 on the scale. 4. Raise needle bar ⑨ from the lowest dead point of its stroke by dimension A. At this time, align the lower marker line engaged on needle bar ⑨ with the bottom end face of needle bar rocking base ⑩, and the lift of the needle bar will be 2.2mm. 5. Move the hook shaft base ③ to the right or left so that the specified clearance of 0 to 0.05mm is secured between the needle and the blade point of the hook and that the needle guard attains the specified effective amount of 0.03 to 0.1mm. Then, tighten the setscrews ① and ② to fasten the hook shaft base ③. 6. For the lower shaft gear ⑤, secure a clearance of 0.5mm toward the end surface of the hook shaft base ③. Since then, tighten the setscrew ⑥ and fix the lower shaft gear ⑤. 7. Install the connector link (Asm.) ⑬ by means of the hinged screw ⑧. At that time, keep the moving knife driving arms ⑭ and ⑮ pressed respectively against ① and ② in the direction of the arrow while the hinge screws ⑧ are tightened. <p>(Caution) 1. Confirm that the lower shaft gear ⑤ has no unwanted contact with the lower shaft gear guide ④.</p> <p>2. If the hook shaft base setscrew ② is tightened too much, a lower shaft torque may be generated, thus giving rise to seizure. (Tightening torque: 2.9N•m)</p> <p>3. In the case of the sewing machine provided with a thread trimmer, confirm the initial position of the moving knife after the completion of adjustments. Refer to (11) –1 Initial positioning of the moving knife.</p> <p>3) Position of the needle and the blade point of the hook</p> <p>o To change the position of needle and the blade point of the hook</p> <ol style="list-style-type: none"> 1. Loosen the three setscrews ⑫ of the hook shaft screw gear ⑪. 2. Let the hook blade tip coincide with the center of the needle to secure Size B and tighten the setscrew ⑫. 	<p>o Stitch skipping or thread breakage will result.</p> <p>o For LH-3528 and 3528-7: The second engraved marker line from the top (DPX5) The fourth engraved marker line from the top falls on (DPX17).</p>

(3) Adjusting the inner hook guide

Standard Adjustment

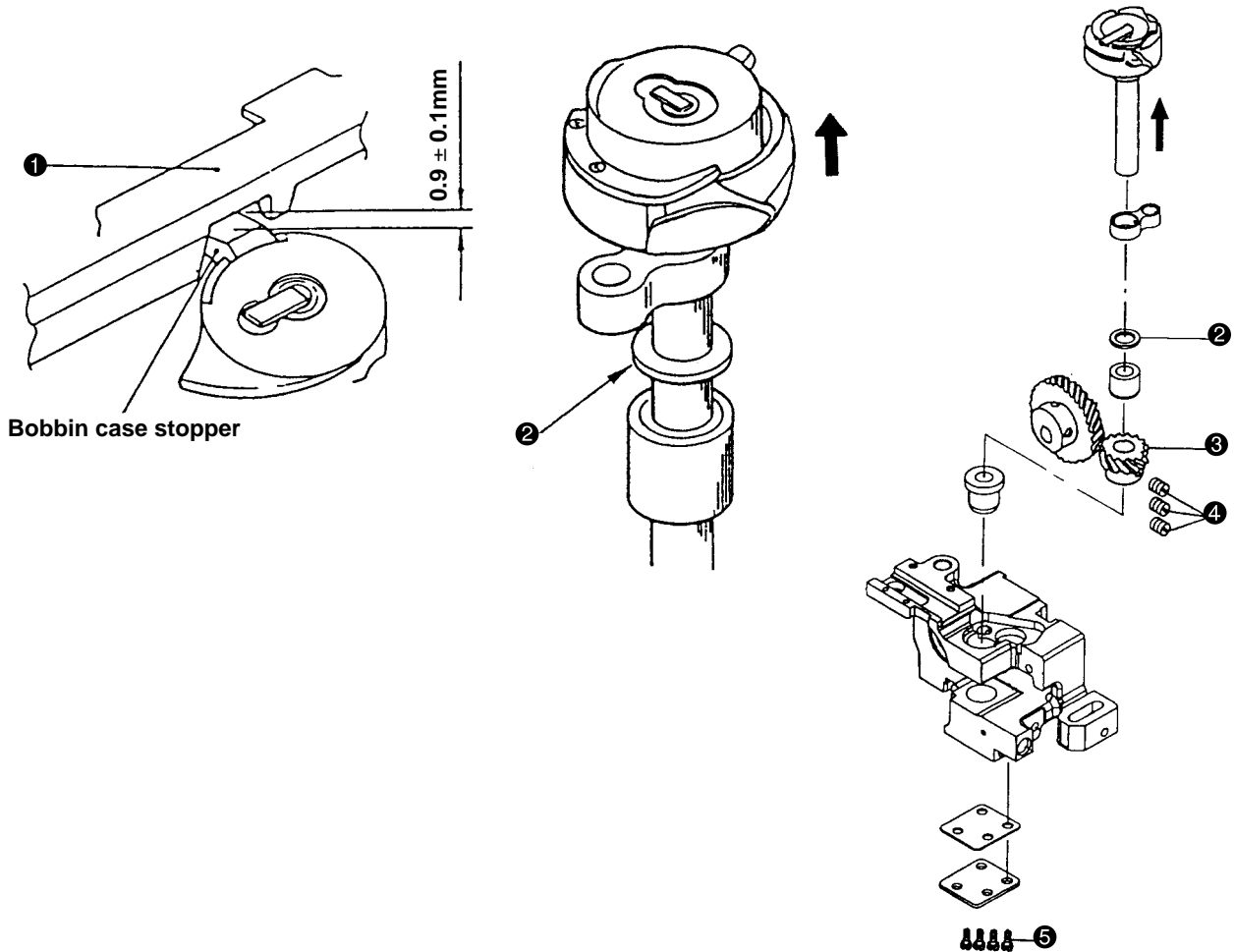


Adjustment Procedure	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Turn the hand wheel in the normal direction (counterclockwise) to bring inner hook guide ❶ to the extreme rear position. 2. Turn the latch inner hook or the bobbin case ❷ in the direction of the arrow, and make inner hook stopper ❸ come in contact with the groove of throat plate ❹. 3. Loosen the setscrew ❺ of the inner hook guide ❶ and adjust the clearance to 0.2 to 0.3mm between the inner hook guide ❶ and the embossed part ❶ of the latch inner hook or the bobbin case ❷. After adjustments, tighten the setscrew ❺. 	<p>If the clearance between the bobbin case and the bobbin case opening lever is large than the specified value:</p> <ul style="list-style-type: none"> o Towel-face stitches, loosened stitches or thread breakage will result. <p>If the clearance is smaller than the specified value:</p> <ul style="list-style-type: none"> o The bobbin case may break.

(4) Clearance between the throat plate and the inner hook clamp section

Standard Adjustment

- o A clearance of $0.9 \pm 0.1\text{mm}$ should be provided between the top surface of the groove on stopper of the throat plate ❶ and the top surface of stopper of the bobbin case.

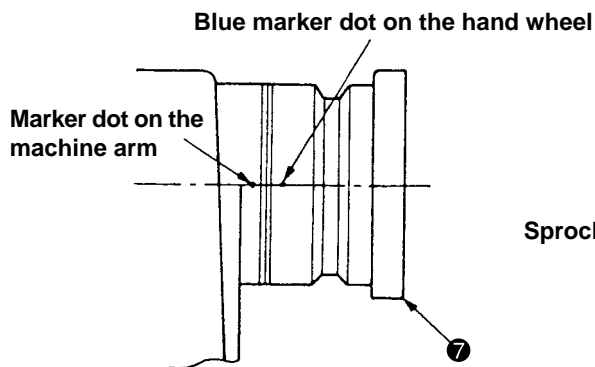
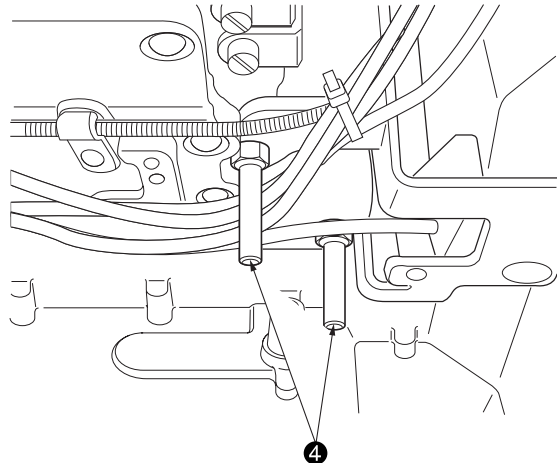
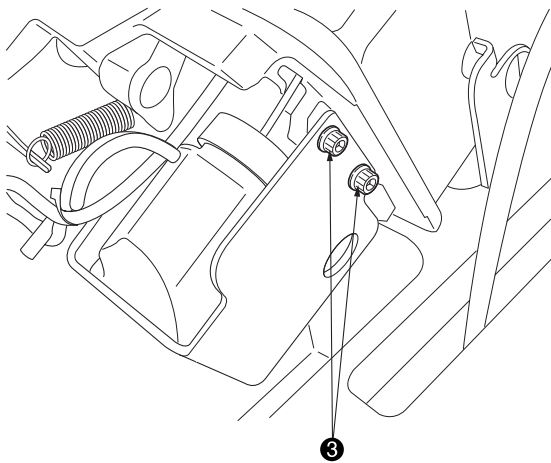
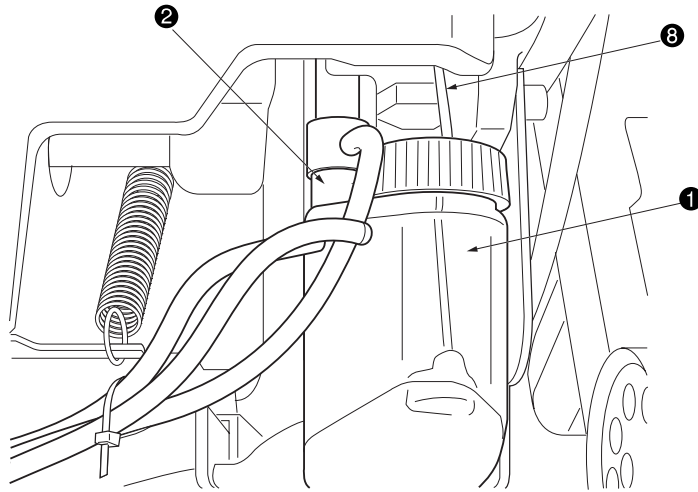


Part No.	Name of part	Engraved mark	Thickness (mm)
10111201	Hook shaft upper bushing thrust plate F	4	1.4
10109809	Hook shaft upper bushing thrust plate B	5	1.5
10112506	Hook shaft upper bushing thrust plate G	6	1.6
10112605	Hook shaft upper bushing thrust plate H	7	1.7
10112704	Hook shaft upper bushing thrust plate K	8	1.8
22614002	Hook shaft upper bushing spacer A	A	1.9
22614101	Hook shaft upper bushing spacer B	B	2.0
22614200	Hook shaft upper bushing spacer C	C	2.1
22614309	Hook shaft upper bushing spacer D	D	2.2

Adjustment Procedure	Results of Improper Adjustment
<p>1. Remove the throat plate ❶ bobbin case opening lever, feed dog and needle.</p> <p>2. Loosen three screws ❷ which are used to secure the hook shaft screw gear ❸.</p> <p>3. For the sewing machine equipped with a thread trimmer, remove the counter knife.</p> <p>4. Draw out the hook upwards.</p> <p>5. Replace the hook shaft upper bushing thrust plate and spacer ❹ of the hook driving shaft upper bushing with appropriate ones.</p> <p>(Caution) 1. For this type of sewing machine, the bottom section of the hook shaft is sealed with gaskets. Therefore, if any air pressure is exerted, loosen the bottom screws ❺ (4 pcs.) used to fix the hook shaft base from the bottom. Then, tighten the setscrews ❷ (3 pcs.) of the hook shaft screw gear ❸ under the condition of no air pressure.</p>	<p>If the clearance provided between the throat plate and the bobbin case stopper is larger than the specified value:</p> <ul style="list-style-type: none"> o The bobbin case may come off the throat plate. <p>If the clearance provided between the throat plate and the bobbin case stopper is smaller than the specified value:</p> <ul style="list-style-type: none"> o Isolated idling loops will result. o Moving knife will come in contact with the hook at the time of thread trimming.

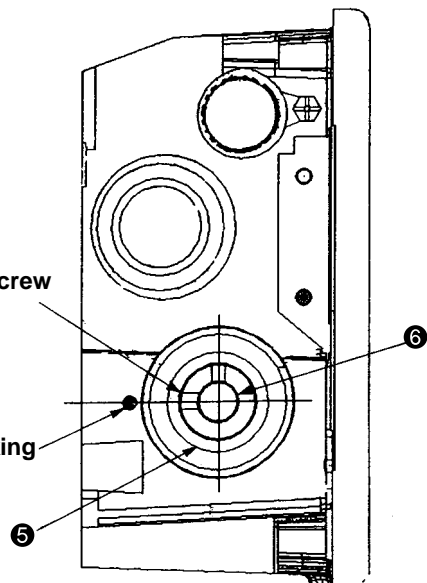
(5) Timing between the main shaft and the lower shaft

Standard Adjustment



Sprocket first setscrew

Engraved marking dot of the bed

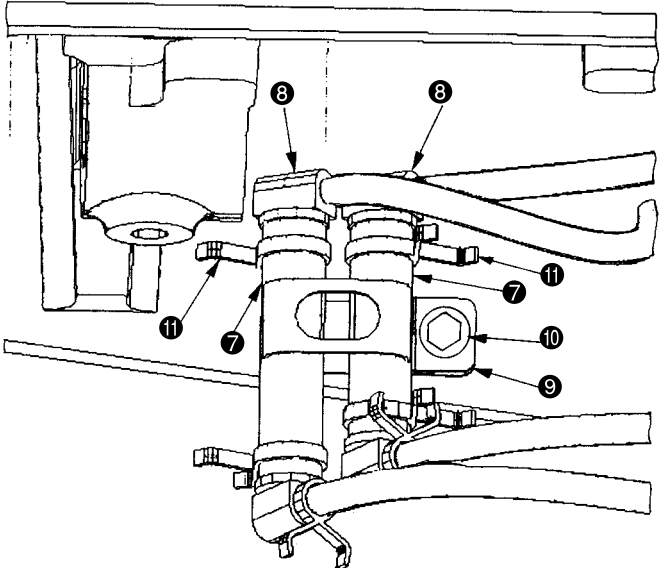
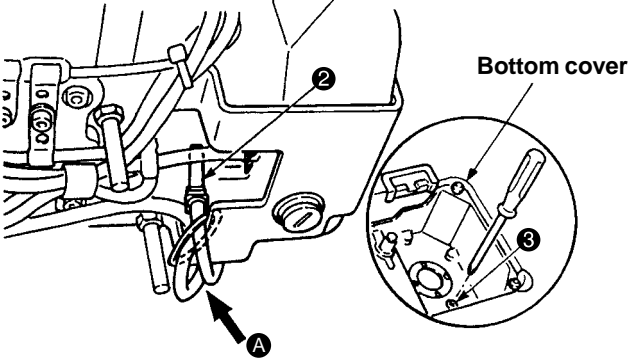
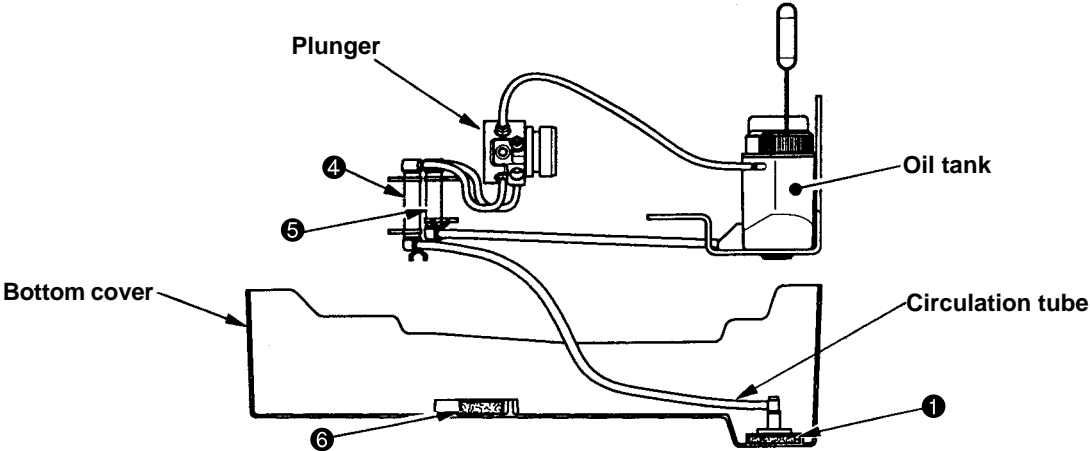


Adjustment Procedure	Results of Improper Adjustment
<ol style="list-style-type: none"> 1. Disconnect the upper joint pipe ② of the oil tank ①. 2. Remove the setscrews ③ (2 pcs.) from the tank mounting plate. Loosen two pieces of the stud ④. In this state, move the oil tank ① to a place where it is none of any hindrance. 3. Remove the timing belt from lower sprocket ⑤ of the lower shaft ⑥. 4. Turn hand wheel ⑦ until the blue marker dot engraved on the machine arm. 5. Turn the lower shaft ⑥ and adjust the first setscrew of the sprocket to the engraved marker dot of the bed. 6. Put the timing belt of lower sprocket ⑤ while securely keeping the main shaft and lower shaft ⑥ held in the correct position. <p>(Caution) The sprocket setscrew shall be fastened to the flat section of the lower shaft ⑥.</p> <ol style="list-style-type: none"> 7. Insert the graduation float ⑧ of the oil tank ① in the hole of the bed. Since then, fix it with the setscrews ③ and stud ④. 8. Insert the upper joint pipe ② in the oil tank ①. 	<p>If the relation between the main shaft and the hook driving Shaft is not correct:</p> <ul style="list-style-type: none"> o Thread trimming timing, needle entry in the feed dog slot and feed timing will change, causing the sewing machine to be locked. So, carefully adjust the relation between the aforementioned shafts.

(6) Lubrication

Standard Adjustment

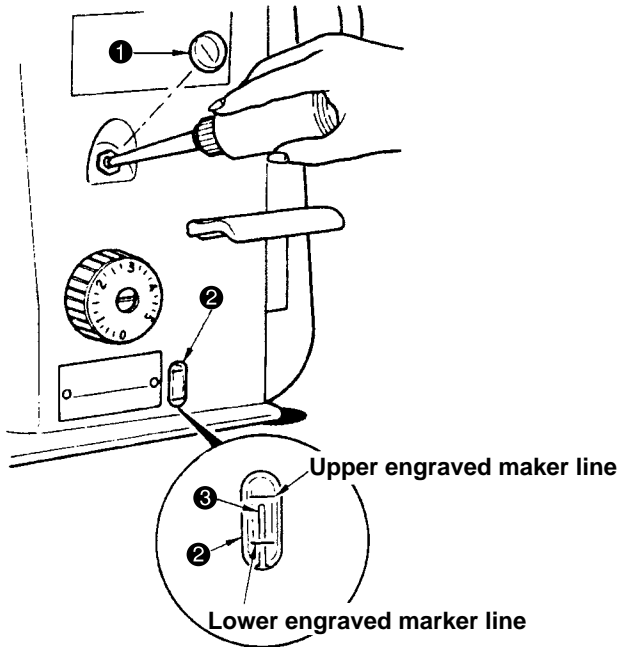
1) Method of lubrication



Adjustment Procedure	Results of Improper Adjustment
<p>1) Method of lubrication</p> <p>1. Method of circulating lubrication (when the oil collected in the bottom cover is reused) Prior to operating the sewing machine, insert a circulation tube in the circulation filter ❶ of the bottom cover (Asm.).</p> <p>2. Method of non-circulation type lubrication (when only the clean oil is used) Securely fix the inlet port for circulation ❷ to the position where it does not come in contact with any movable section as indicated by the arrow A.</p> <p>(Caution) 1. Remove the drain screw ❸ and periodically discard the oil collected in the bottom cover.</p> <p>2. When the inlet port for circulation ❷ comes in contact with the bottom cover, oil is absorbed without passing the filter. As a result, trouble will be caused.</p> <p>3. How to clean the filter section Plunger filter 1 ❹ and Plunger filter 2 ❺</p> <p>(1) Loosen the setscrew ❿ of the lubrication tube holder ❾ for removal from the bed.</p> <p>(2) Loosen the pipe stopper ⓫ to take out the tube ⓪ and the joint ⓬.</p> <p>(3) Recover the initial state after the removal of dust attached to the net area of the joint ⓬.</p> <p>(4) For the urethane filter ❻ and the circulation filter ❶, remove thread chips, cloth, and dust from these filters.</p> <p>(Caution) Periodically (approximately once every three months), clean the filter sections ❶, ❹, ❺ and ❻ (four places). Exercise due care not to clog the plunger filter 2 ❺. Failure to observe this may impair the lubricating function resulting in burning the hook.</p>	

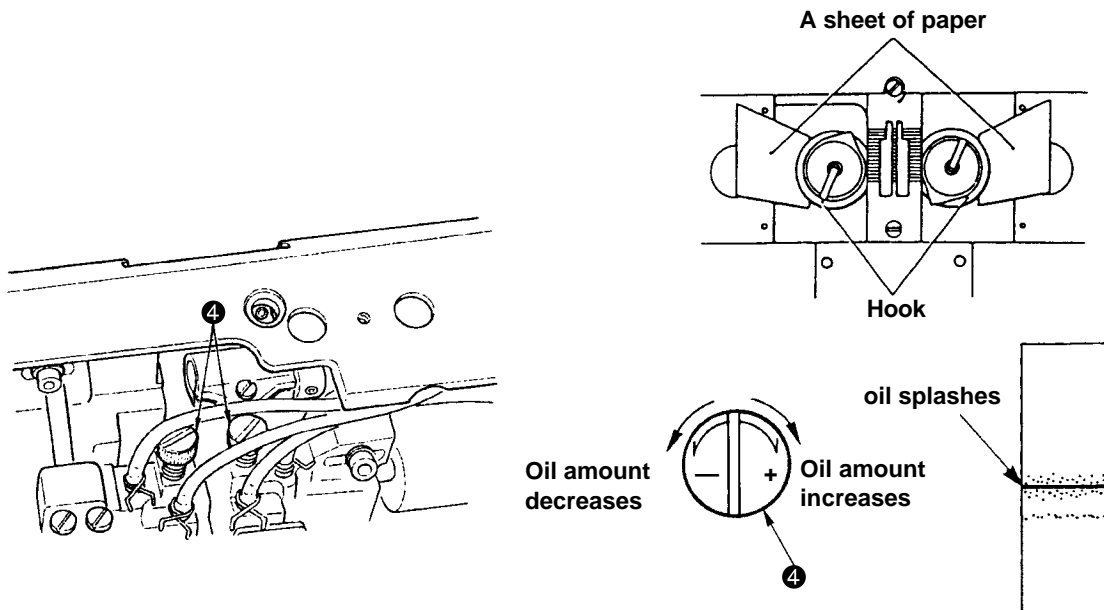
Standard Adjustment

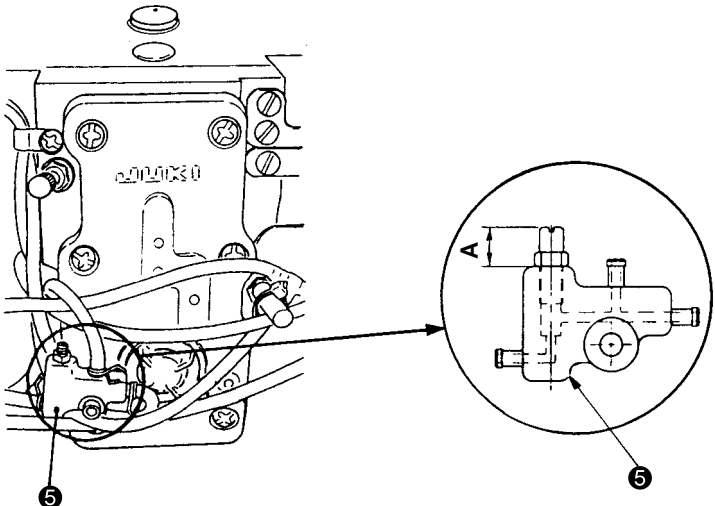
2) Lubrication to the oil tank



3) Adjustment of hook oil amount

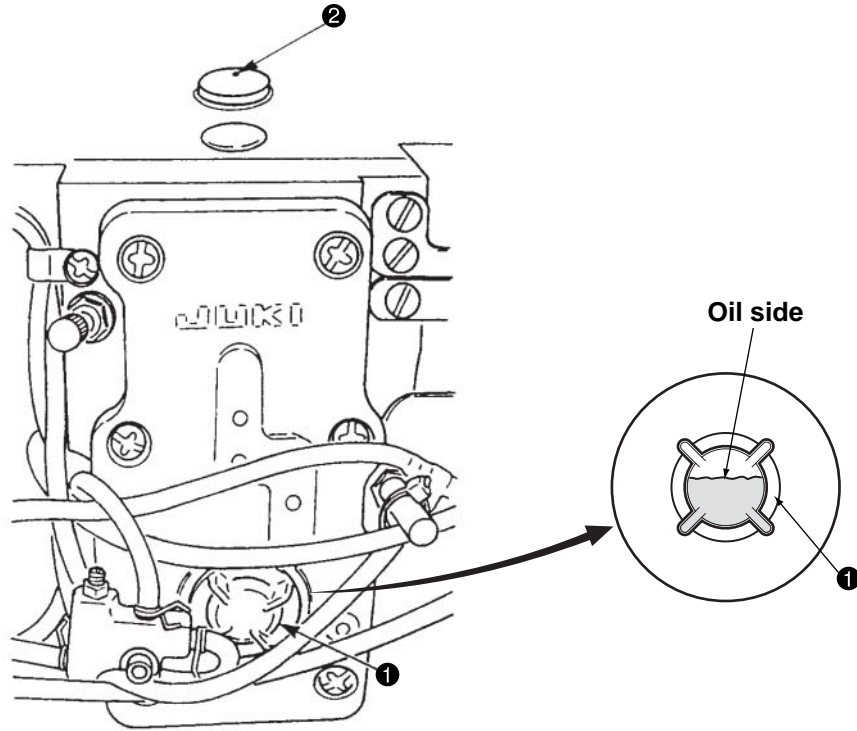
Condition : After 30 seconds of idling, there shall be generation of oil splashes in 5 seconds.



Adjustment Procedure	Results of Improper Adjustment
<p>2) Lubrication to the oil tank Fill the oil tank with oil for hook lubrication before operating the sewing machine.</p> <ol style="list-style-type: none"> 1. Remove oil hole cap ❶ and fill the oil tank with JUKI New Defrix Oil No. 1 or JUKI MACHINE OIL No. 7 using the oiler supplied with the machine. 2. Feed the lubricant so that the tip of the oil amount indicating rod ❸ comes in between the upper and lower engraved marker lines of the oil amount indicating window ❷. In this case, note that excessive oil supplement will result in oil leakage from the air hole of the oil tank or failure in normal lubrication. 3. When you operate the sewing machine, refill oil if the top end of oil amount indicating rod ❸ comes down to the lower engraved marker line of oil amount indicating window ❷. <p>(Caution) 1. When you use anew sewing machine or a sewing machine after an extended period of disuse, use the sewing machine after performing break-in at 2,000 rpm or less.</p> <p>2. For the oil for hook lubrication, purchase JUKI New Defrix Oil No. 1 (Part No. : MDFRX1600C0) or JUKI MACHINE OIL No. 7 (MML007600CA).</p> <p>3) Adjustment of hook oil amount The amount of oil can be adjusted with the oil amount adjusting screw ❹ that is mounted on the hook shaft base. The amount of oil is increased when the oil amount adjusting screw ❹ is turned clockwise, and is decreased when it is turned counterclockwise. The amount of oil is measured in five seconds.</p> <p>(Caution) 1. For the adjustment of a larger or smaller amount of oil than the amount to be regulated by the oil amount adjusting screw ❹ of the hook shaft base, adjust the Screw Height A of the oil distribution base ❺.</p> <p>2. When the Screw Height A is increased, the overall amount becomes small. If it is decreased, the overall amount becomes large. (Initial height: 8.5mm)</p> 	<ul style="list-style-type: none"> o JUKI Machine Oil No.7 (For China) o JUKI New Defrix Oil No. 1 (Domestic use, others, export) <ul style="list-style-type: none"> o If the amount of oil in the hook is insufficient, poorly-tensed seam will result. Furthermore, the hook will become hot causing seizure. o If the amount of oil in the hook is excessive, the thread will be stained with oil. The material will also be stained with oil.

Standard Adjustment

4) Oil in the feed box



Adjustment Procedure	Results of Improper Adjustment
<p>4) Oil in the feed box</p> <ol style="list-style-type: none"> 1. When the sewing machine is used, confirm through the oil can be seen in the inspection window ❶ that the lubricant is contained in the feed box. 2. The amount of oil in the feed box is 55cc. (The oil type shall be of JUKI MACHINE OIL No. 18.) 3. The oil in the feed box is different from the hook oil. Do not replenish the oil. <p>(Caution) 1. Never Open the feed box unless any problem.</p> <ol style="list-style-type: none"> 2. There is no problem if the top surface of the oil can be seen in the inspection window ❶. (In the case that the head is tilted with the proper head support bar attached on the proper table) 	<p>When the amount of oil is little</p> <ul style="list-style-type: none"> o The lubricant is not carried as far as to the feed mechanism, thus causing the reduction of durability or the occurrence of rattles or abrasion. <p>When the amount of oil is much</p> <ul style="list-style-type: none"> o The oil may ooze out of the air relief hole ❷ on the side face of the bed.

Standard Adjustment

5) Applying grease

[Grease storage place]

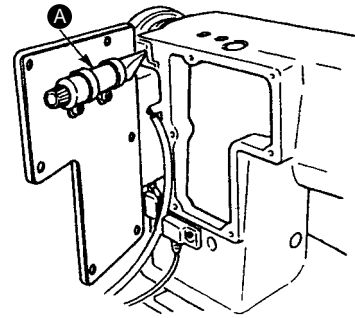
For the safe usage of a sewing machine, periodically apply a grease (once every 2 or 3 years for standard) to the application spots specified for each model, by means of a cotton applicator or the like. For the sewing machine provided with a thread trimmer (LH-3528-7, LH-3568-7), an alarming sound is generated when the time for grease-up comes. When this alarming is heard, a grease-up action has to be taken.

(Caution) 1. Never feed oil to the grease-up spots.

2. It must be noted that too much grease application may result in grease leakage from the thread take-up lever cover section or the needle bar.

The grease tube is mounted inside the window plate **A**.

o JUKI GREASE A: 40006323 (10g tube)

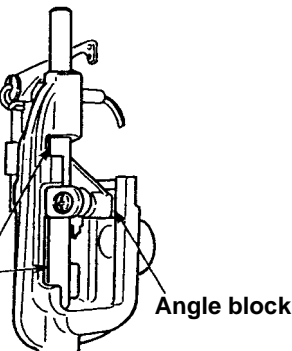


[LH-3528, LH-3528-7]

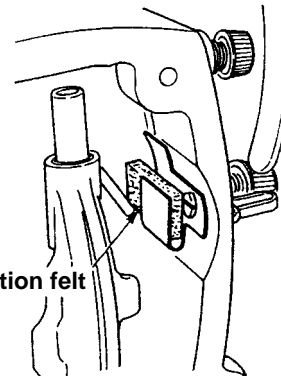
Thread take-up lever
(oil wick)

Needle bar

Angle block

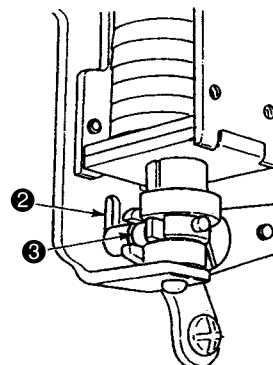
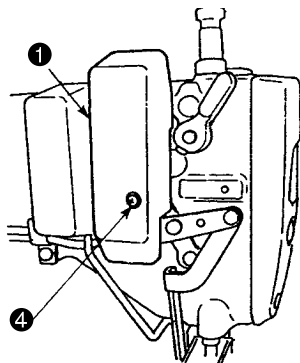


Face section lubrication felt



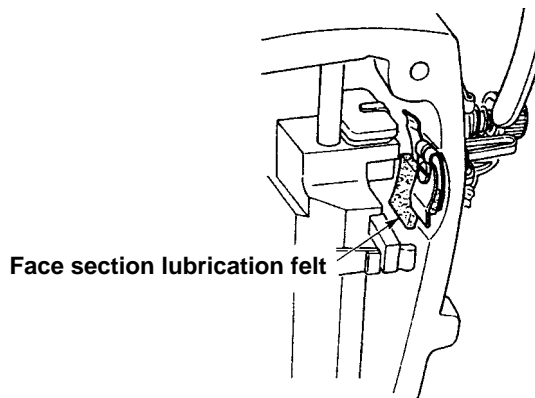
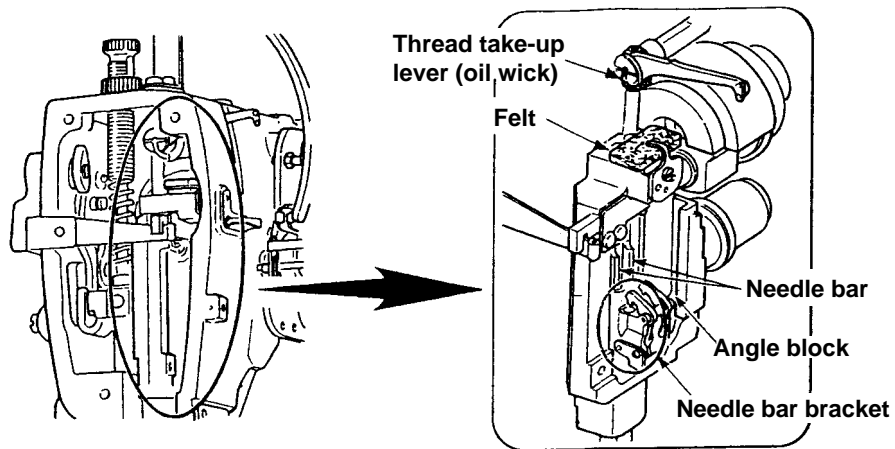
[LH-3528-7, LH-3568-7]

Loosen the setscrew **4** to remove the wiper cover **1** and apply grease to the oblong hole section **2** of the wiper solenoid base and also to the wiper link color **3**.



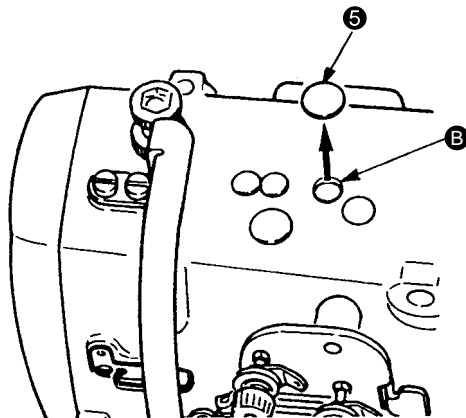
Standard Adjustment

[LH-3568, LH3568-7]



[Common]

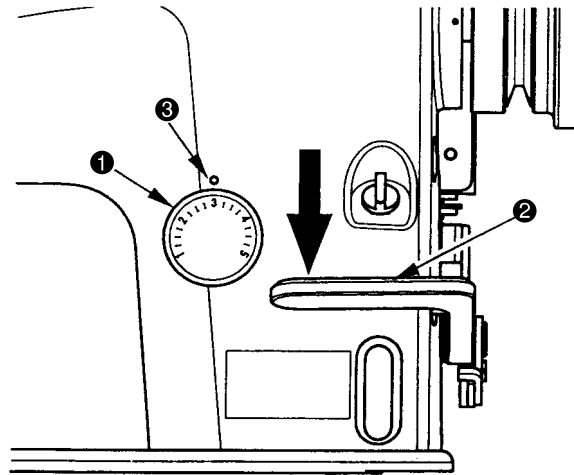
Remove the plug ⑤ to take out the inner felt from ⑥. After removing the old grease from the hole inside and the felt, feed a new grease in the hole and then enter the grease-soaked felt. In addition, feed another amount of grease and set a cap of the plug ⑤.



(7) Feed pitch

Standard Adjustment

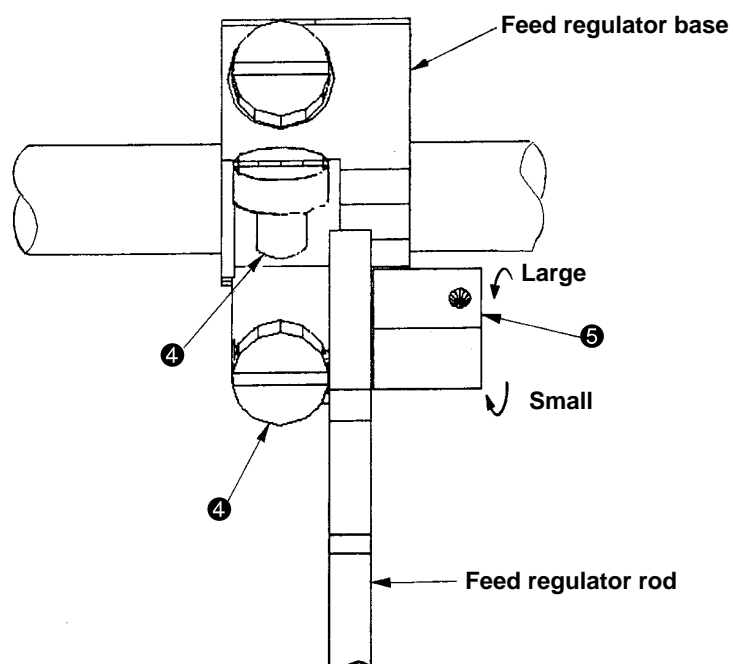
1) Adjusting the stitch length



2) Pitch adjustment of forward and reverse stitches

Conditions

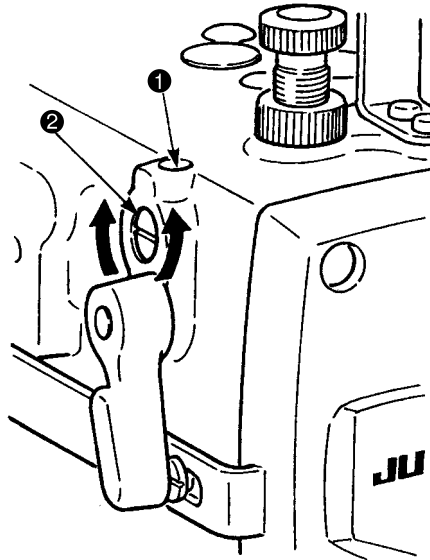
- o When the stitch dial is set at "3," the difference in the stitch length between the normal feed stitching and reverse feed stitching should be 0.2 mm or less.



Adjustment Procedure	Results of Improper Adjustment
<p>1) Adjusting the stitch length</p> <ol style="list-style-type: none"> 1. Turn stitch dial ❶ counterclockwise (clockwise) to set the value on the dial corresponding to a desired stitch length to the marker dot ❸ engraved on the machine arm. 2. When it is hard to turn stitch dial ❶, turn it while slightly depressing reverse feed control lever ❷. 3. Reverse feed operation <ol style="list-style-type: none"> (1) Depress reverse feed control lever ❷. (2) Reverse stitches are made as long as you keep depressing the lever. (3) Release lever, and the machine will run forward. <p>2) Pitch adjustment of forward and reverse stitches</p> <ol style="list-style-type: none"> 1. Set the stitch dial at "3". 2. Loosen two screws ❹ in the feed regulator base. 3. Move the feed regulator rod pin ❺ in the direction of the arrow to adjust so that a difference in the stitch length becomes 0.2mm or less between the normal feed stitching and the reverse feed stitching. Fasten the setscrews ❹ (2 pcs.) of the feed regulator base. 	<p>o The stitch length for reverse feed stitching will be different from that for the normal feed stitching.</p>

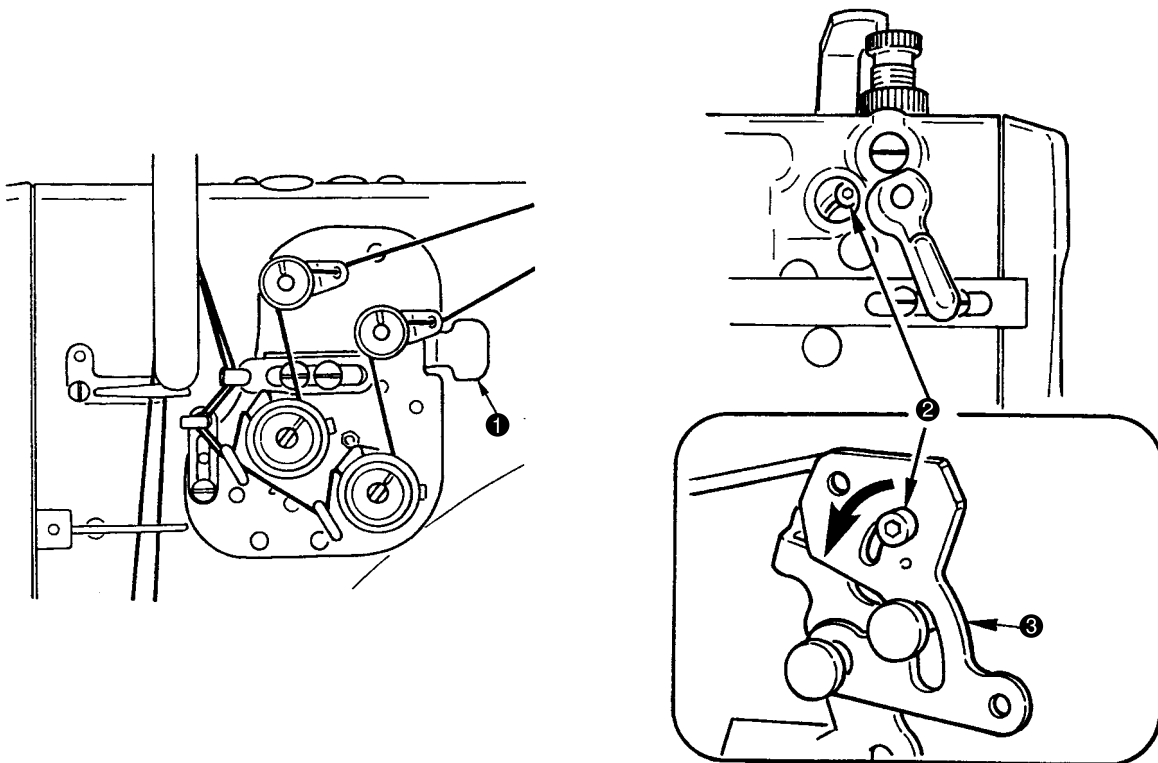
(8) Micro-lifter

Standard Adjustment



(9) Thread tension release changeover when using the knee lifter

Standard Adjustment



Adjustment Procedure	Results of Improper Adjustment
<p>1. Loosen the screw ❶ and turn the micro-lifter pin ❷ in the direction of the arrow so that the height of the presser foot can be adjusted to 0 to 0.5 mm.</p> <p>(Caution) Adjustments shall be based on the condition that the presser is keeping contact with the throat plate.</p>	

Adjustment Procedure	Results of Improper Adjustment
<p>At the time of shipment, LH-3528 and LH-3528-7 are adjusted so that there is interlinkage between the knee lifter thread tension release. On the other hand, LH-3568 and LH-3568-7 are adjusted so that there is no interlinkage. When loosening the thread, press the disc releasing plate ❶ to lift the disc.</p> <p>1. When interlocking the thread tension release</p> <ol style="list-style-type: none"> (1) When a wiper is provided, remove the wiper solenoid. (2) Remove the plug located behind and loosen the hexagon-hole screw ❷. Move the hexagon-hole screw ❷ in the direction of the arrow fully to the oblong hole of the lifter link ❸ and fix the hexagon-hole screw ❷. <p>(Caution) 1. Thread slacks when turning cloth at the corner stitching, and sewing trouble of thread tension release may occur.</p> <p>2. When the wiper is not used at the time of thread trimming, needle thread may be drawn out when removing cloth.</p> <p>3. The hexagon-hole screw ❷ can be loosened, but must not be removed.</p> <p>2. For no interlinkage with the thread tension release Move the hexagon-hole screw ❷ to the initial position specified in 1. above.</p>	

(10) Separately driven needle mechanism (LH-3568, LH-3568-7 only)

Operating procedures for the separately driver needle mechanism

[To stop the right-hand needle bar]

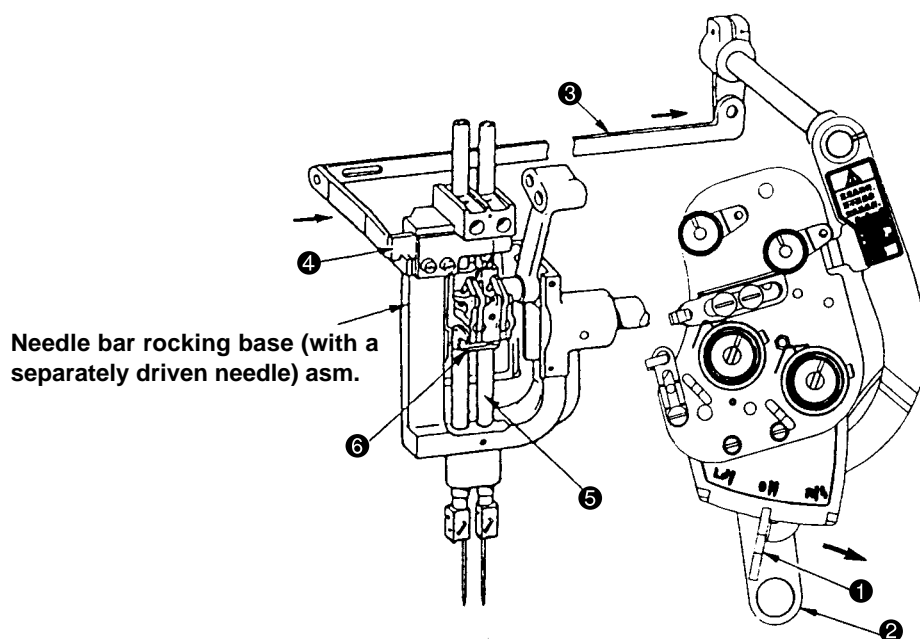
- (1) Move repositioning lever ❶ to the R side.
The repositioning release lever ❷ is raised and locked.
- (2) Move slider ❹ to the right by way of repositioning plate ❸ that is attached to repositioning lever ❶.
- (3) When the protruded portion of the slider ❹ comes in contact with the release pin of the needle bar connection (Asm) ❺ that is attached to the needle bar ❽, the clutch lever located inside the needle bar connection (Asm) ❻ is separated from the needle bar ❽ and the needle bar ❽ stops.

[To release the needle bar from stopped state]

- (1) When the repositioning release lever ❷ is pressed, the repositioning lever ❶ returns to its original position.
- (2) Slider ❹ returns to the center position by way of repositioning plate ❸ that is attached to repositioning lever ❶.
- (3) The protruded portion of the slider ❹ pushes the release pin and the clutch lever fits again in the needle bar ❽ to move it up and down.

(Caution) 1. At the time of the replacement of parts, the needle bar connection (Asm) ❺ and the needle bar rocking base (with a separately driven needle) should be replaced in a set.

- 2. Adjustments for needle bar stoppage should be done through the selection of the slider ❹. When the upper dead point of the needle bar is assumed to be 0° , the slider ❹ should be selected so that the needle bar can stop within the range of $326.5^\circ \pm 0.5^\circ$. (For selecting the slider ❹, refer to "1) Initial position of the conversion lever".)**



Explanation of the separately driven needle

o 2-needle operation mode → Single-needle operation mode

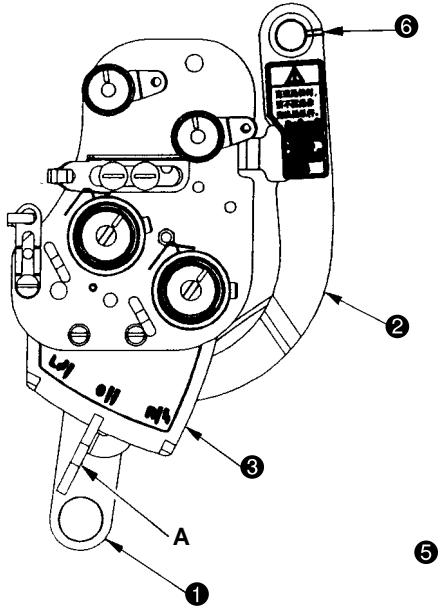
<p>①</p> <p>Needle bar rocking base</p> <p>Portion A</p> <p>Needle bar connection</p> <p>Portion B</p> <p>Direction of spring force</p>	<p>②</p>	<p>③</p>
<p>① Under the 2-needle operation mode, the needle bar clutch ① fits in the groove on portion B of the needle bar to clamp the needle bar ②.</p>	<p>② When you operate the repositioning ($0 \rightarrow \overset{L}{R}$), the slider ③ is brought to the position at which it comes in contact with the clutch lever ④. When the sewing machine rotates in this state, the clutch lever ④ is tilted by the slider ③ to cause actions ①, ②, and ③ in the written order.</p>	<p>③ As a result, the needle bar clutch ① comes off portion B of the needle bar, which sets the needle bar ② free. Now, portion A is secured by the needle bar stopper ⑤. The needle bar clutch ① is caught by the needle bar clutch stopper ⑥ to allow the machine to operate under the single-needle operation mode.</p>

o Single-needle operation mode → 2-needle operation mode

<p>①'</p>	<p>②'</p>	<p>③'</p>
<p>①' Operate the repositioning lever ($\overset{L}{R} \rightarrow 0$) to bring the slider ③ to a position at which the slider comes in contact with the release pin ⑦. In this state, rotate the sewing machine (the needle bar ② is held secured by the needle bar stopper ⑤.)</p>	<p>②' Now, the needle bar clutch stopper ⑥ is pressed down by the release pin ⑦. This allows the needle bar clutch ⑤ to fit in portion B of the needle bar. This causes actions ①, ② and ③ in the written order.</p>	<p>③' When the needle bar clutch ① has fitted in portion B of the needle bar, the seesaw plate ⑧ pushes the needle bar stopper ⑤ to restore the 2-needle operation mode.</p>

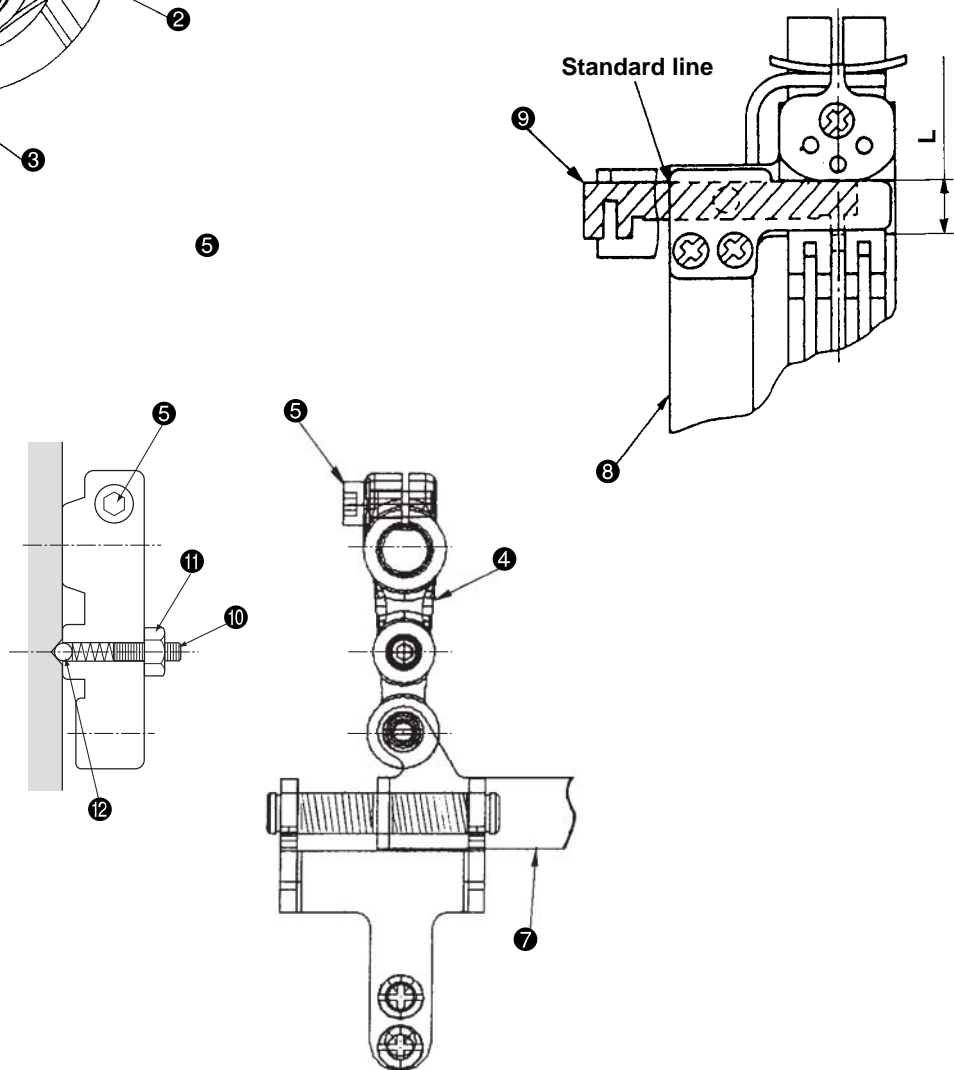
Standard Adjustment

- 1) Initial position of the repositioning lever
- 2) Adjustment of anti-bound level of changing lever



Conditions

- o Section A of repositioning lever ② is set at the "0" position of the thread tension plate ③, the leftmost end face of the needle bar rocking base ⑤ is almost aligned with the standard line of the slider ⑨.



Part No.	Part name	Engraved mark	Dimension L (mm)
22681951	Slider (Assy) A	A	11.0
22682058	Slider (Assy) B	B	11.1
22682157	Slider (Assy) C	C	11.2
22682256	Slider (Assy) D	D	11.3
22682335	Slider (Assy) E	E	11.4

Adjustment Procedure	Results of Improper Adjustment
<p>1) Initial position of the repositioning lever</p> <ol style="list-style-type: none"> 1. Turn the hand wheel to bring the needle bar to the lowest dead point. 2. Press the repositioning release lever ❶ to release the repositioning lever ❷. 3. At this time, confirm that section A of repositioning lever ❷ is aligned with the "0" position of thread tension plate ❸. 4. If they are not aligned with each other, loosen repositioning arm screw ❹ as illustrated and align section A of repositioning lever ❷ with the "0" position of thread tension plate ❸. <p>Then, firmly tighten repositioning arm screw ❹.</p> <p>(Caution) 1. Do not loosen two screws ❺ in the conversion lever.</p> <p>2. When tightening repositioning arm screw ❹, using repositioning lever ❷ and repositioning arm ❸.</p> <p>If there is a play at the clamping screw, repositioning lever ❷ will be pushed against repositioning plate ❻, In this case, the function to stop either needle bar separately will not work normally, the separately-stopped needle will not be released from the stop state or needle bar breakage will occur.</p> <p>2) Adjustment of anti-bound level of changing lever</p> <ol style="list-style-type: none"> 1. Loosen the changing arm adjusting nut ❶. Reduce the bound when the changing lever ❷ is discharged by adjusting the pressure applied to the ball ❸ resulting from turning the changing arm adjusting screw ❹. Then, tighten the changing arm adjusting nut ❶. 	<ul style="list-style-type: none"> o If the initial position of the repositioning lever ❷ is not correct, the function to separately drive the needle bars will not work properly.

3) Quick-reference table of stitches classified for medium stitch pitch gauges number of stitches

1/8" (3.17mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40		4.4	2.9	2.2	1.7	1.5			
50		3.4	2.3	1.7					
60		2.7	1.8						
70	4.5	2.3	1.5						
80	3.8	1.9							
90	3.2	1.6							
100	2.6								

5/32" (3.96mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40			3.6	2.7	2.2	1.8	1.6		
50		4.2	2.8	2.1	1.7				
60		3.4	2.3	1.7					
70		2.8	1.9						
80	4.7	2.4	1.6						
90	4.0	2.0							
100	3.3	1.7							

3/16" (4.76mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40				3.3	2.6	2.2	1.9	1.6	1.5
50			3.4	2.6	2.0	1.7	1.5		
60			2.7	2.1	1.6	1.4			
70		3.4	2.3	1.7	1.4				
80		2.8	1.9	1.4					
90	4.8	2.4	1.6						
100	4.0	2.0							

7/32" (5.56mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40			5.1	3.8	3.1	2.5	2.2	1.9	1.7
50			4.0	3.0	2.4	2.0	1.7	1.5	
60		4.8	3.2	2.4	1.9	1.6			
70		4.6	2.6	2.0	1.6				
80		3.3	2.2	1.7					
90	5.6	2.8	1.9	1.4					
100	4.7	2.3	1.6						

1/4" (6.35mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40				4.4	3.5	2.9	2.5	2.2	2.0
50			4.6	3.4	2.8	2.3	2.0	1.7	1.6
60			3.7	2.8	2.2	1.9	1.6		
70		4.6	3.1	2.3	1.9	1.6			
80		3.8	2.6	1.9	1.6				
90		3.2	2.2	1.6					
100		2.7	1.8						

9/32" (7.14mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40				4.9	3.9	3.3	2.8	2.5	2.2
50			5.1	3.8	3.1	2.6	2.2	1.9	1.7
60			4.1	3.1	2.5	2.1	1.8	1.5	
70		5.1	3.4	2.5	2.0	1.7	1.5		
80		4.3	2.8	2.1	1.7	1.4			
90		3.6	2.4	1.8	1.4				
100		3.0	2.0	1.5					

5/16" (7.93mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40					4.4	3.7	3.2	2.8	2.5
50				4.3	3.4	2.9	2.5	2.2	1.9
60			4.6	3.5	2.8	2.3	2.0	1.8	1.6
70			3.8	2.9	2.3	1.9	1.7	1.5	
80		4.8	3.2	2.4	1.9	1.6			
90		4.0	2.7	2.0	1.6				
100		3.4	2.3	1.7					

3/8" (9.52mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40						4.4	3.7	3.3	2.9
50					4.1	3.4	2.9	2.6	2.3
60				4.1	3.3	2.7	2.4	2.1	1.8
70			4.5	3.4	2.7	2.3	1.9	1.7	
80			3.8	2.8	2.3	1.9	1.6		
90		4.8	3.2	2.4	1.9	1.6			
100		4.0	2.7	2.1	1.6				

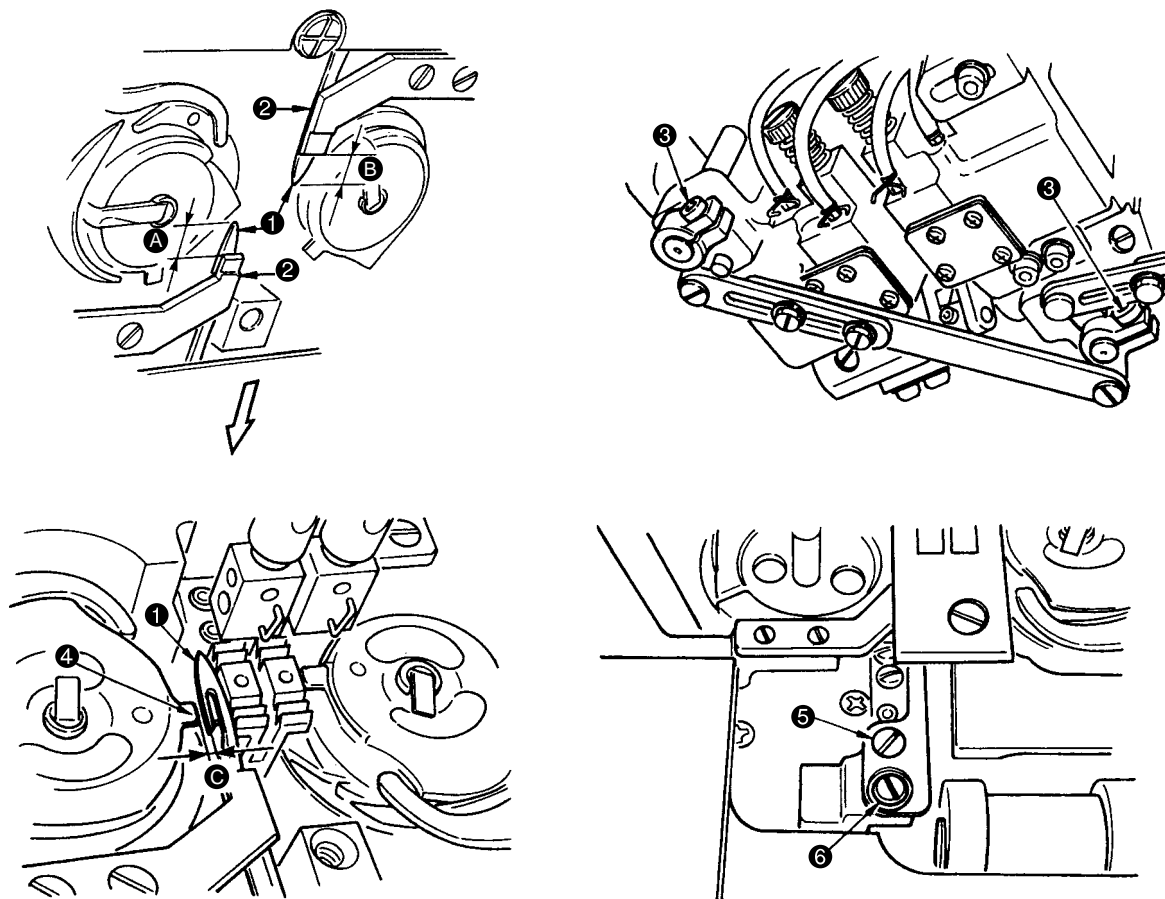
1/2" (12.7mm)

Number of stitches Turning angle	1	2	3	4	5	6	7	8	9
40						5.8	5.0	4.4	3.9
50					5.5	4.5	3.9	3.4	3.0
60				5.5	4.4	3.7	3.1	2.8	2.4
70				4.5	3.6	3.0	2.6	2.3	2.0
80			5.1	3.8	3.1	2.5	2.2	1.9	1.7
90			4.2	3.2	2.5	2.1	1.8	1.6	1.4
100		5.3	3.6	2.7	2.1	1.8	1.5	1.3	

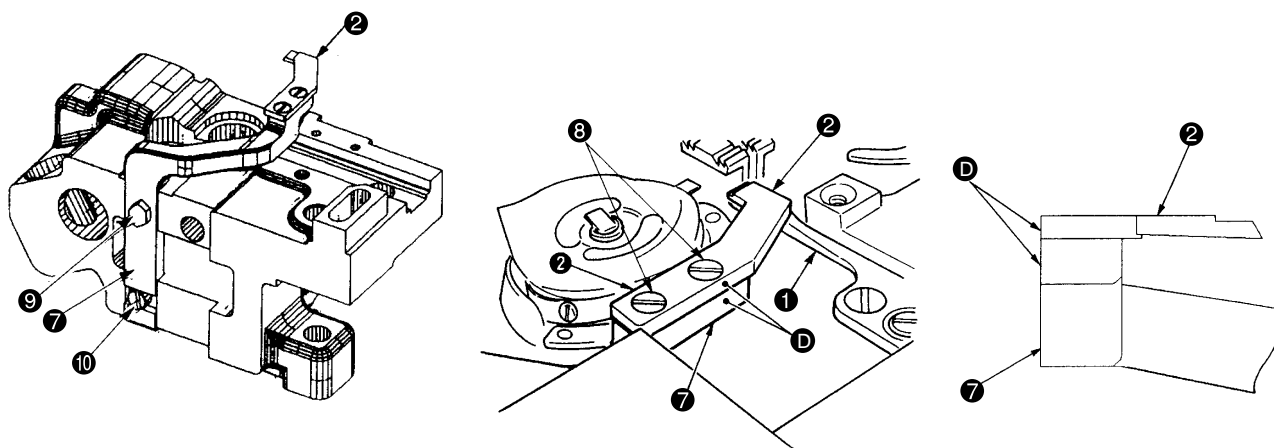
(11) Thread trimming device

Standard Adjustment

1) Forward/backward positioning of the moving knife

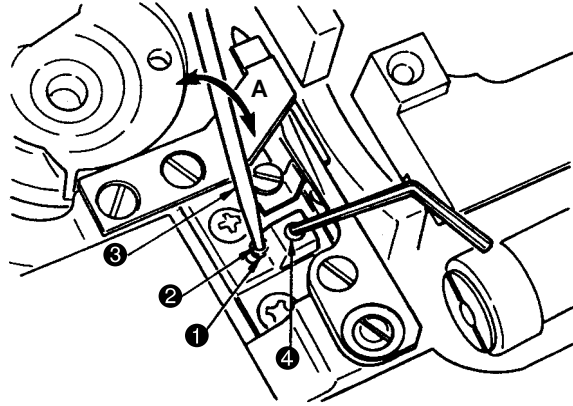


2) Adjusting the height of the counter knife

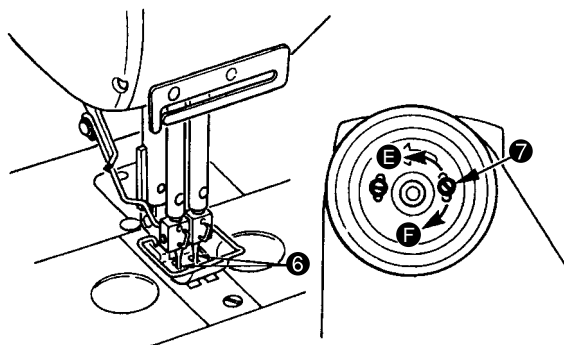
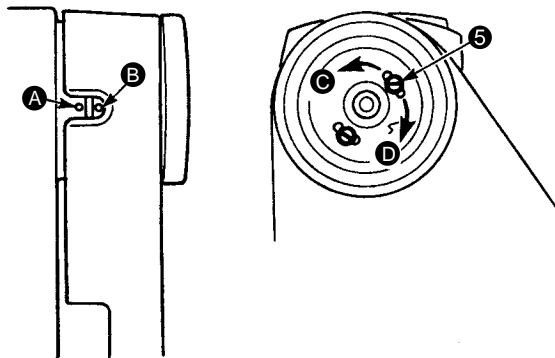


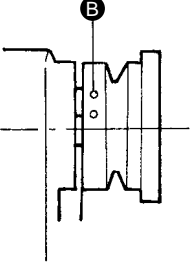
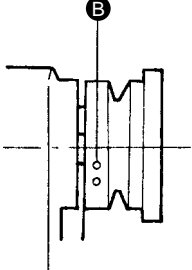
Standard Adjustment

3) Adjusting the thread presser spring



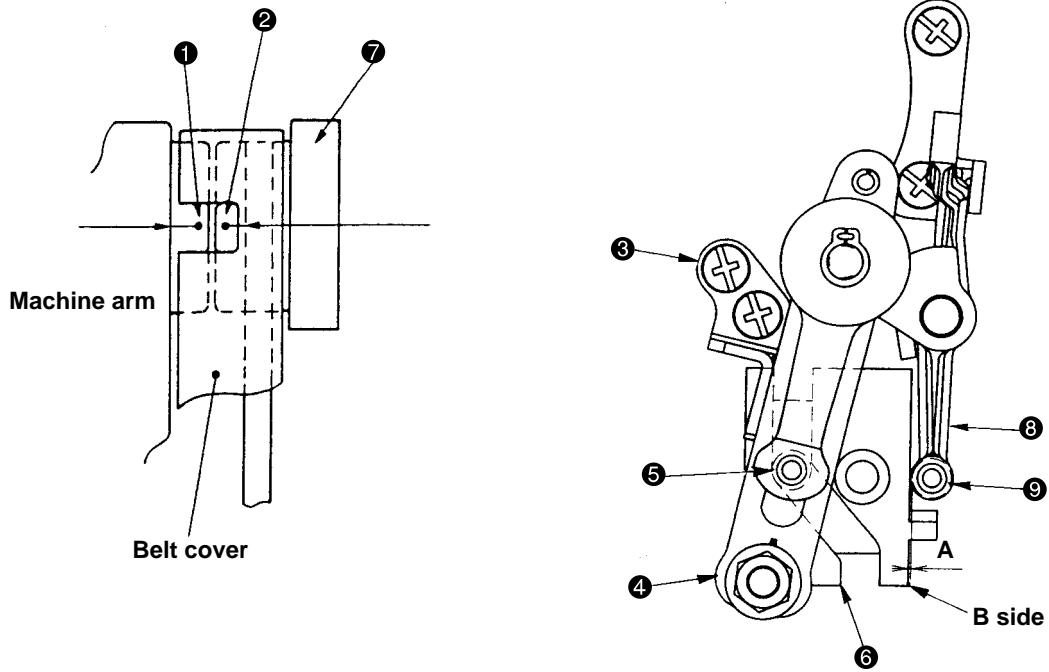
4) Adjusting the needle stop position



Adjustment Procedure	Results of Improper Adjustment
<p>3) Adjusting the thread presser spring</p> <ol style="list-style-type: none"> 1. Insert a rod ③ (thin rod, wrench, etc.) into adjusting hole ② in thread presser spring base ①, and loosen setscrew ④ with a hexagonal wrench key of 1.5 mm. 2. Adjust the thread presser spring by rod ③ in the direction of arrow mark A, and fix it with setscrew ④. <p>(Caution) 1. Clamp trouble occurs even when the thread presser spring pressure is excessive or insufficient. So, be careful.</p> <ol style="list-style-type: none"> 2. If there is any malfunction at the beginning of sewing due to clamping deficiency after thread trimming under the condition of using synthetic thin thread needle count #60 or below with LH-3568-7, the hook height should be modified from 0.9 ± 0.1 to 1.2 ± 0.1. (For procedures, refer to (4) Clearance between the throat plate and the inner hook fastening block.) <p>4) Adjusting the needle stop position</p> <p>o UP stop position to be assumed after thread trimming</p> <ol style="list-style-type: none"> 1. The standard UP needle stop position is obtained by aligning marker dot ① on the machine arm with white marker dot ② on the hand wheel. 2. The DOWN needle stop position can be adjusted by stopping the needle in the DOWN position, turning the power OFF, and loosening the screw ③ to perform adjustments within the slot of the screw. The needle stop timing is advanced if you move the screw in the direction of ④, and the timing is delayed if you move the screw in the direction of ⑤. <p>(Caution) Do not operate the machine with screw ③ loosened. Just loosen the screw, and do not remove it.</p> <p>o Lower stop position</p> <ol style="list-style-type: none"> 1. The DOWN needle stop position when the pedal is returned to the neutral position after the front part of the pedal is depressed can be adjusted the same as UP stop. Stop needle ⑥ in DOWN position, turn OFF the power, and loosen screw ⑦ to perform adjustment within the slot of the screw. The needle stop timing is advanced if you move the screw in the direction of ⑧, and the timing is delayed if you move the screw in the direction of ⑨. <p>(Caution) Do not operate the machine with screw ⑦ loosened. Just loosen the screw, and do not remove it.</p>	<div style="display: flex; justify-content: space-around; align-items: flex-start;"> <div style="text-align: center;">  <p>Thread trimming timing is excessively advanced.</p> </div> <div style="text-align: center;">  <p>Thread trimming timing is excessively retarded.</p> </div> </div> <p>If the thread trimming timing is excessively advanced:</p> <ul style="list-style-type: none"> o Needle thread will come out of the needle eyelet. o Thread trimmer will fail to operate normally, which will result in thread trimming failure. o Needle thread clamp failure will occur at the time of thread trimming. <p>If the thread trimming timing is excessively retarded:</p> <ul style="list-style-type: none"> o The needle will interfere with the wiper. o Thread trimming failure will occur.

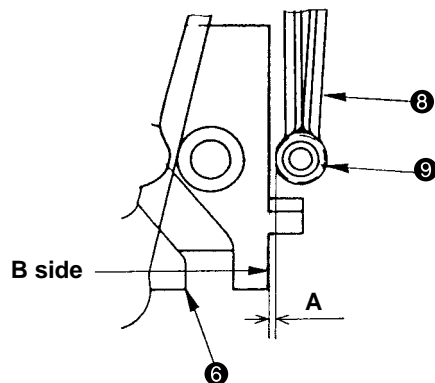
Standard Adjustment

5) Position of the thread trimming cam and the thread trimming timing



6) Clearance between the thread trimming cam and the thread loosening arm

Enlarged Part A in the top right diagram

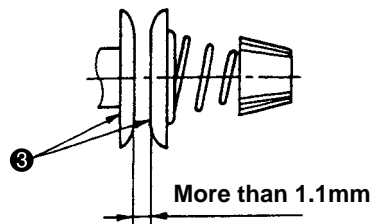
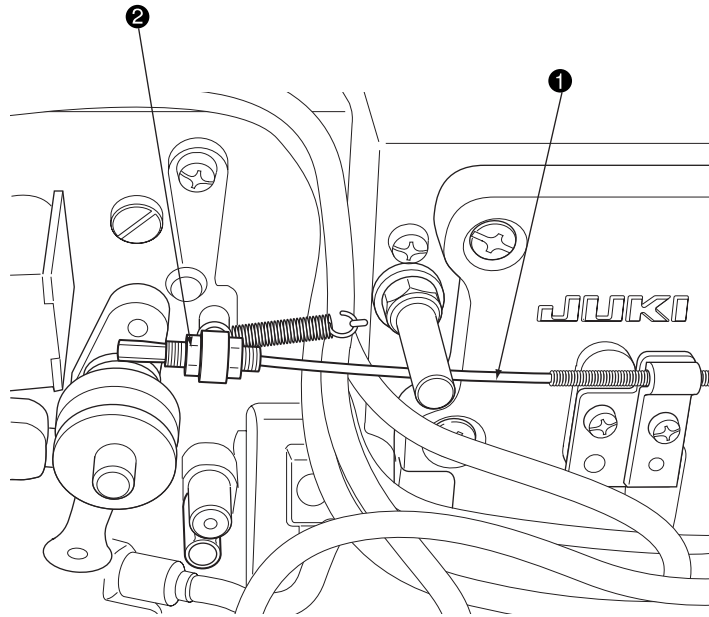


Adjustment Procedure	Results of Improper Adjustment
<p>5) Position of the thread trimming cam and the thread trimming timing</p> <ol style="list-style-type: none">1. Let the arm's engraved marker dot ❶ coincide with the engraved marker dot (red) of the hand wheel ❷.2. In the state that the knife driving arm ❹ is keeping contact with the stopper ❸ of the thread trimmer driving arm, push in the cam roller ❺ and set it in the groove of the thread trimming cam ❻.3. In this state, turn the thread trimming cam ❻ as far as the illustrated position. In this position (midpoint where the groove shape of the thread trimming cam ❻ changes from straight to diagonal), tighten the tightening screws (2 pcs.) of the thread trimming cam ❻. <p>o Checking the thread trimming timing</p> <ol style="list-style-type: none">1. Push in the cam roller ❺ until it assumes the posture being settled in the cam groove.2. Turn the hand wheel ❷ in the direction opposite to the sewing machine revolving direction and stop it where it is hooked. Confirm in this case that the engraved marker dot (red) of the hand wheel ❷ exactly coincides with the arm's engraved marker dot ❶. <p>6) Clearance between the thread trimming cam and the thread loosening arm</p> <ol style="list-style-type: none">1. Push in the thread relieving arm ❸.2. At that time, adjustments should be carried out so that Clearance A of 0.5mm is secured between Face B on the right end face of the thread trimming cam ❻ and the roller section ❾ of the thread relieving arm ❸.	<p>When the clearance is large:</p> <ul style="list-style-type: none">o The amount of disc floating in the disc floating mechanism becomes insufficient and a thread trimming error is caused. <p>When the clearance is small:</p> <ul style="list-style-type: none">o The roller section ❾ comes in contact with the thread trimming cam ❻ and the thread trimmer cannot function.

Standard Adjustment

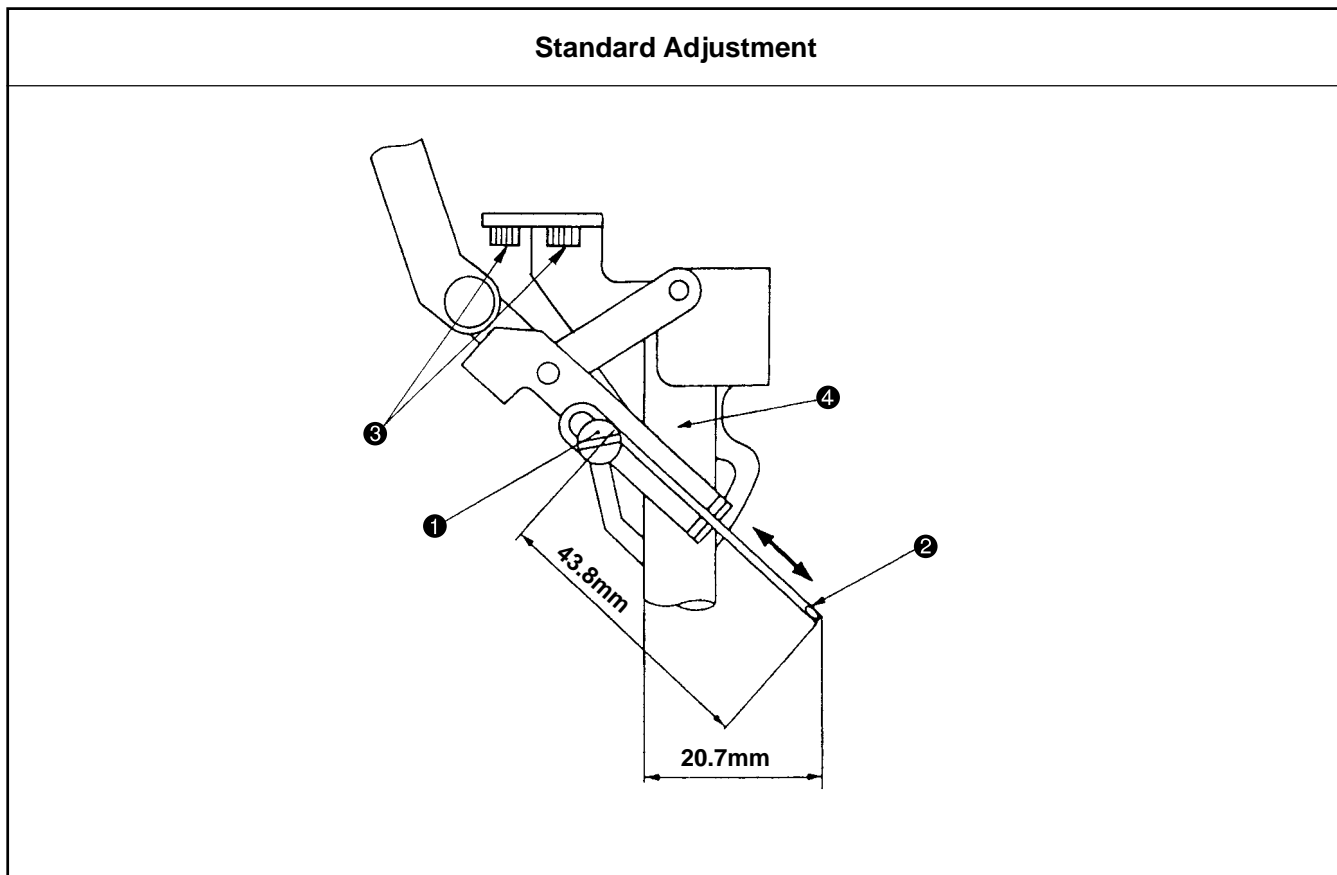
7) Adjustment of thread tension release

When the disc floating arm makes a maximum rocking motion, the clearance of the thread tension disc ③ shall be 1.1mm or more.

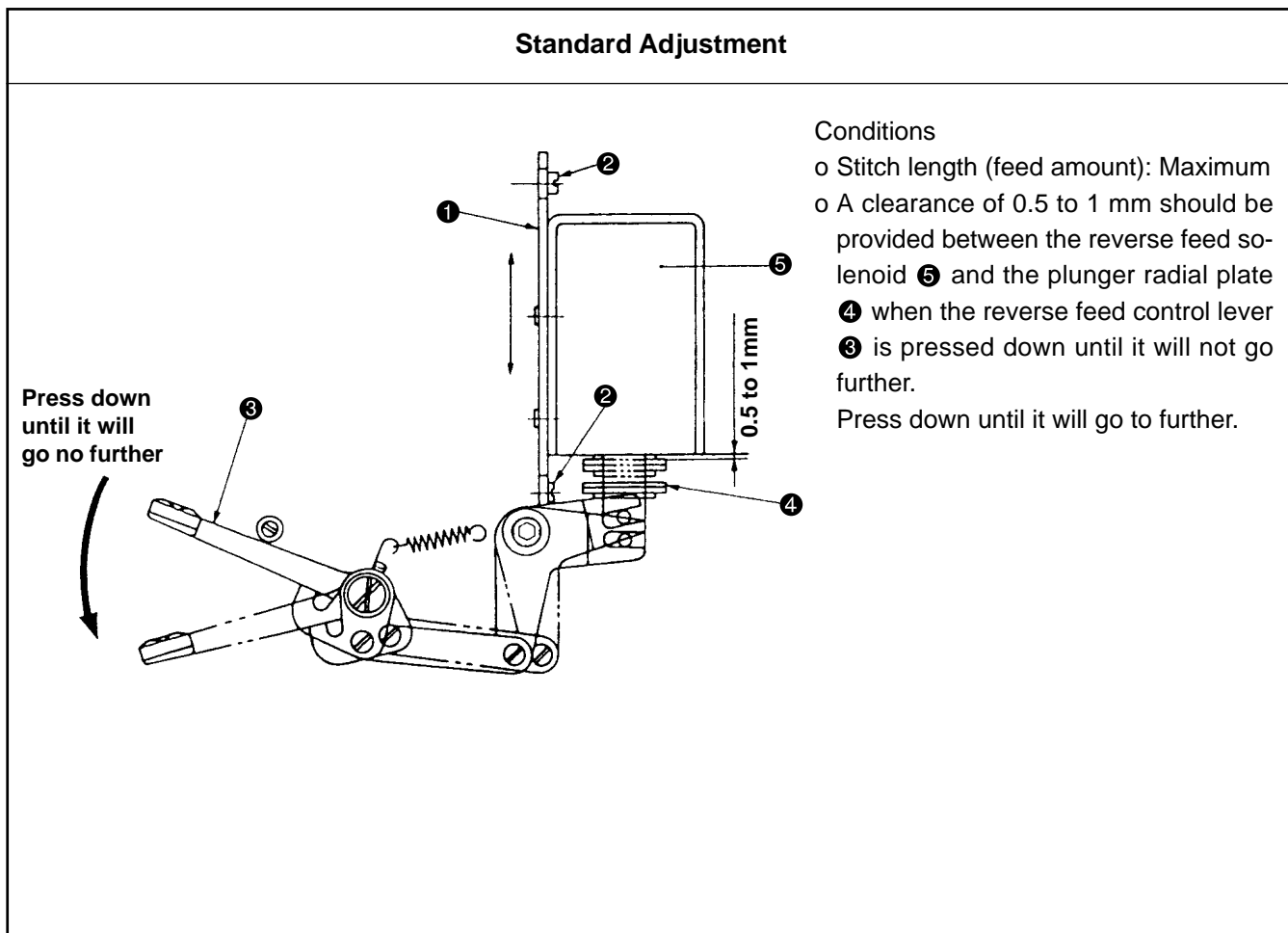


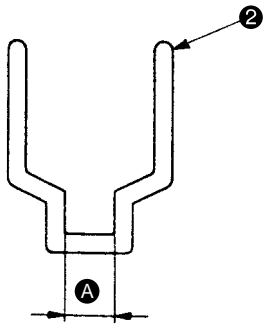
Adjustment Procedure	Results of Improper Adjustment
<p>7) Adjustment of thread tension release</p> <ol style="list-style-type: none"> 1. Push the driving arm of the thread trimming knife in the direction of the cam and turn the hand wheel in forward direction in order to actuate the thread trimmer. 2. Check the amount of floating of the thread tension disc ③ when the disc floating arm makes a rocking motion and the thread tension release wire ① is pulled at a maximum level. 3. If the amount of thread tension disc floating seems to be insufficient, try to loosen the nut ② to shift the thread tension release wire ① to the left. This adjustment will increase the amount of floating. (1.1mm or more) 	

(12) Wiper components



(13) Reverse feed solenoid position



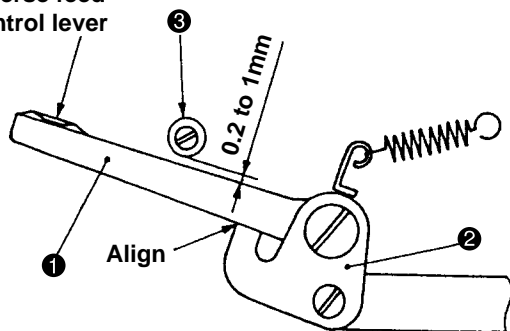
Adjustment Procedure	Results of Improper Adjustment															
<p>1. Loosen screw ❶ (2pcs.). Move wiper ❷ in the direction of the arrow so that the length of the wiper is adjusted to 43.8 mm as illustrated. Then, tighten the screws ❶ (2pcs.).</p> <p>2. Loosen two screws ❸, and adjust the distance to 20.7 mm between the top end of the wiper and presser bar ❹. Then, tighten the screws ❸.</p> <div style="display: flex; align-items: center; margin-top: 10px;">  <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Gauge size (inch)</th> <th>Part No.</th> <th>Dimension A (mm)</th> </tr> </thead> <tbody> <tr> <td>3/22" to 3/8"</td> <td>10209203</td> <td>16</td> </tr> <tr> <td>7/16" to 5/8"</td> <td>10209500</td> <td>24</td> </tr> <tr> <td>3/4" to 7/8"</td> <td>10209807</td> <td>30</td> </tr> <tr> <td>1" to 1 1/4"</td> <td>10209906</td> <td>37</td> </tr> </tbody> </table> </div>	Gauge size (inch)	Part No.	Dimension A (mm)	3/22" to 3/8"	10209203	16	7/16" to 5/8"	10209500	24	3/4" to 7/8"	10209807	30	1" to 1 1/4"	10209906	37	<ul style="list-style-type: none"> o If the wiper ❷ is too long (longer than 43.8 mm), the wiper will interfere with the needle clamp while the sewing machine is in operation. o If the wiper ❷ is not correctly positioned (the clearance between the presser bar and the wiper is larger than 20.7 mm), the wiper will interfere with the needle clamp while the sewing machine is in operation. o If the wiper ❷ is not correctly positioned (the clearance between the presser bar and the wiper ❷ is smaller than 20.7 mm), the wiper will come in contact with the needle while the wiper is in operation. (The needle may break.)
Gauge size (inch)	Part No.	Dimension A (mm)														
3/22" to 3/8"	10209203	16														
7/16" to 5/8"	10209500	24														
3/4" to 7/8"	10209807	30														
1" to 1 1/4"	10209906	37														

Adjustment Procedure	Results of Improper Adjustment
<p>1. Set the stitch dial to the max. value on the scale.</p> <p>2. Loosen two setscrews ❷ in solenoid mounting base ❶.</p> <p>3. Press the reverse feed control lever ❸ until it stops to move the solenoid mounting base ❶ up or down so that the clearance provided between the plunger radial plate ❹ and the underside of the reverse feed solenoid ❺ can be adjusted to 0.5 to 1 mm. Then, tighten the setscrews ❷.</p> <p>* This adjustment should be carried out after the completion of adjustments as per (14) Initial position of the reverse feed control lever.</p>	<p>If the clearance provided between the plunger radial plate and the reverse stitching solenoid is larger than the specified value:</p> <ul style="list-style-type: none"> o The attraction of the solenoid will be decrease. In this case, the machine fails to start reverse feed stitching. <p>If there is no clearance provided between the plunger radial plate and the reverse stitching solenoid:</p> <ul style="list-style-type: none"> o The stitch length for reverse feed stitching will be decreased.

(14) Initial position of the reverse feed control lever

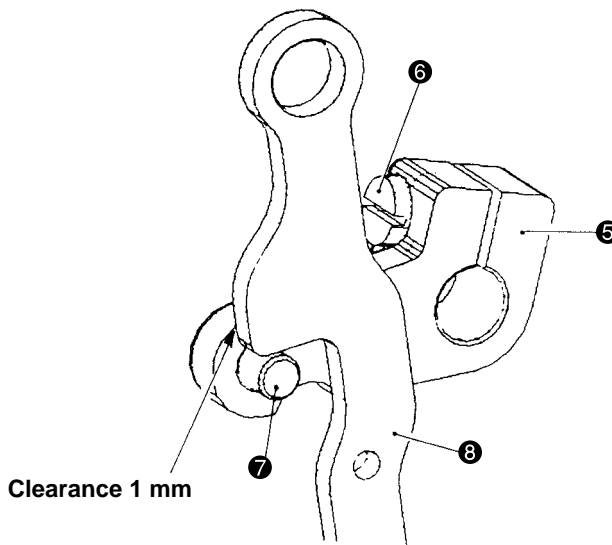
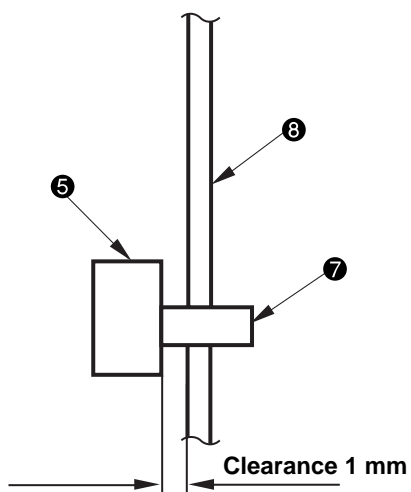
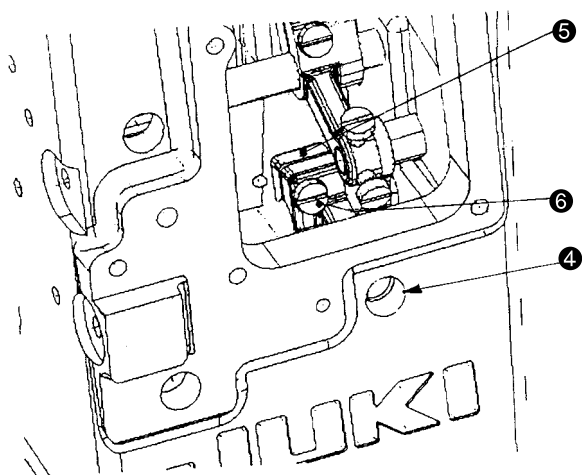
Standard Adjustment

Lightly press the reverse feed control lever



Conditions

- o Stitch length (feed amount) should be maximized.
- o Lightly press the reverse feed control lever ① until the lever is aligned with the reverse feed link ②, a clearance of 0.2 to 1 mm should be provided between the reverse feed control lever ① and the back lever stopper ③.

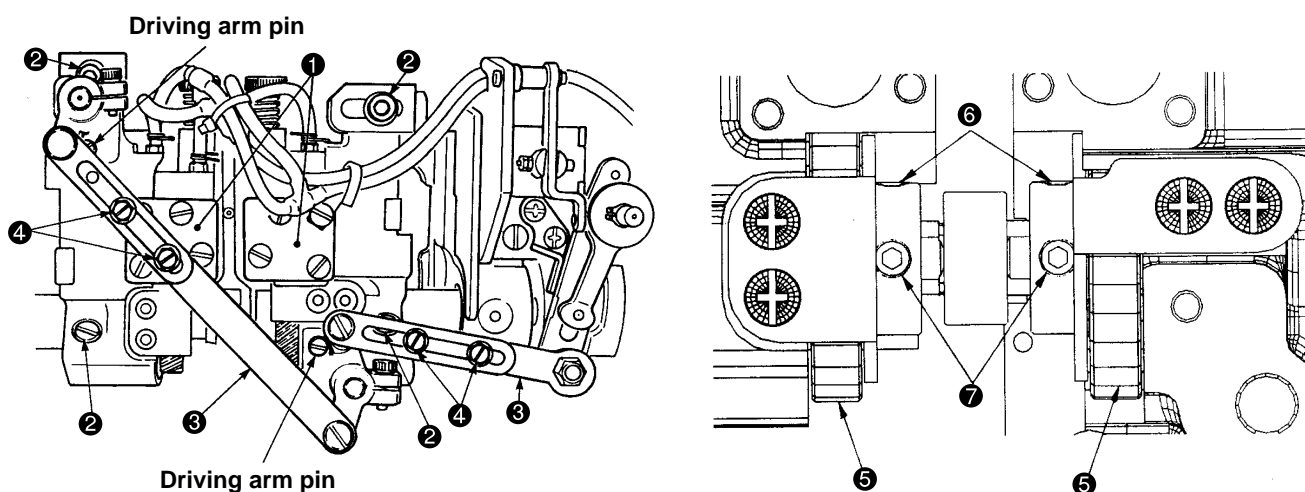


Adjustment Procedure	Results of Improper Adjustment
<p>1. Set the stitch dial at the maximum value on the scale.</p> <p>2. Lightly press reverse feed control lever ❶ down until it meets reverse feed link ❷. At this time, a clearance of 0.2 to 1 mm should be provided between reverse feed control lever ❶ and back lever stopper ❸.</p> <p>3. If the aforementioned clearance is smaller than 0.2 mm or larger than 1 mm, set the stitch dial at 5 on the scale.</p> <p>4. Secure a clearance of 0.2 to 1mm between the reverse feed lever ❶ and the back lever stopper ❸ so that the reverse feed lever ❶ can coincide with the reverse feed link ❷.</p> <p>5. In the above-mentioned state, loosen the setscrew ❹ of the reverse feed arm ❺ from the arm hole ❷. Tighten the setscrew ❹ where the pin ❽ of the reverse feed arm ❺ can contact the feed regulator rod ❸.</p> <p>(Caution) Tighten the setscrews ❹ in the position where a clearance of 1mm can be secured between the feed regulator rod ❸ and the reverse feed arm ❺.</p>	<p>If the clearance provided between the back lever stopper and the reverse feed control lever is 0 (zero):</p> <ul style="list-style-type: none"> o The kinky reverse feed control lever ❶ will occur. o Stitch length will be shortened. <p>If the clearance provided between the back lever stopper and the reverse feed control lever is 1 mm or more:</p> <ul style="list-style-type: none"> o Stitch length will be reduced when performing reverse feed stitching.

6. Gauge replacing procedure

(1) How to remove the gauge

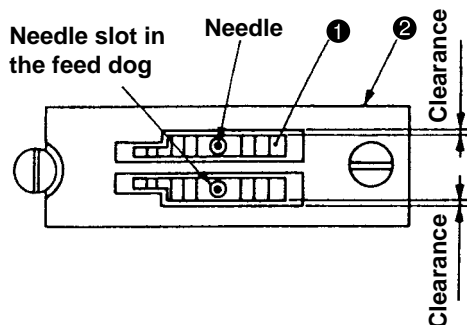
- 1) Turn OFF the power switch.
- 2) Remove the slide plate, needle, needle clamp, presser foot, throat plate and feed dog.
 - * In the case of a thread trimming machine provided with a wiper, refer to the table of "5.-(12) Wiper components". Remove the wiper if the replacing gauge size is not found in the present wiper range.
- 3) Tilt the sewing machine.
- 4) Loosen the setscrew ② of the hook shaft base ①.
 - * In the case of a thread trimming machine, loosen the setscrews ④ (2 pcs.) of the connecting link (Asm.) ③. They can be loosened but cannot be removed.
- 5) Loosen the setscrews ⑥ (2 pcs.) of the lower shaft gear ⑤.
 - * At that time, never remove the first setscrew ⑦ that has been fixed to the flat section of the lower shaft. The amount of release for this setscrew should be such that the first setscrew ⑦ does not come off the flat section of the lower shaft when the lower shaft gear ⑤ is turned by hand.



(2) How to install the gauge

- 1) Raise the sewing machine.
- 2) Attach the feed dog in position. _____ Refer to "5.-(1)-2) Adjustment of the right and left feed dog positions, height, and gradient".
- 3) Attach the needle clamp and needle in position. _____ Refer to "5.-(1)-4) Needle entry".
- 4) Adjust the height of the needle bar. _____ Refer to "5.-(1)-3) Needle bar height".
- 5) Remove the throat plate.
- 6) Tilt the sewing machine.
- 7) Move the hook shaft base from its home position. Adjust so that the specified clearance is provided between the needle and the blade point of the hook. Then, fix the hook shaft. _____ Refer to "5.-(2) Timing between the needle and the hook".
- 8) Fix the lower shaft gear. _____ Refer to "5.-(2) Timing between the needle and the hook".
- 9) Raise the sewing machine.
- 10) Attach the throat plate in position.
- 11) Attach the presser foot in position.
- 12) Attach the wiper in position. _____ Refer to "5.-(12) Wiper components".

(Caution) 1. When attaching feed dog ①, confirm that it is equidistantly spaced in the feed dog slot in throat plate ② with respect to the lateral direction. Also confirm that the needle enters the center of the needle slot in feed dog ①.



2. For the LH-3568 and 3568-7, the needle bar height shall be adjusted to the height of the upper face of the throat plate above the bottom face of the needle clamp while the amount of feed is kept minimal at the lower dead point of the needle bar.

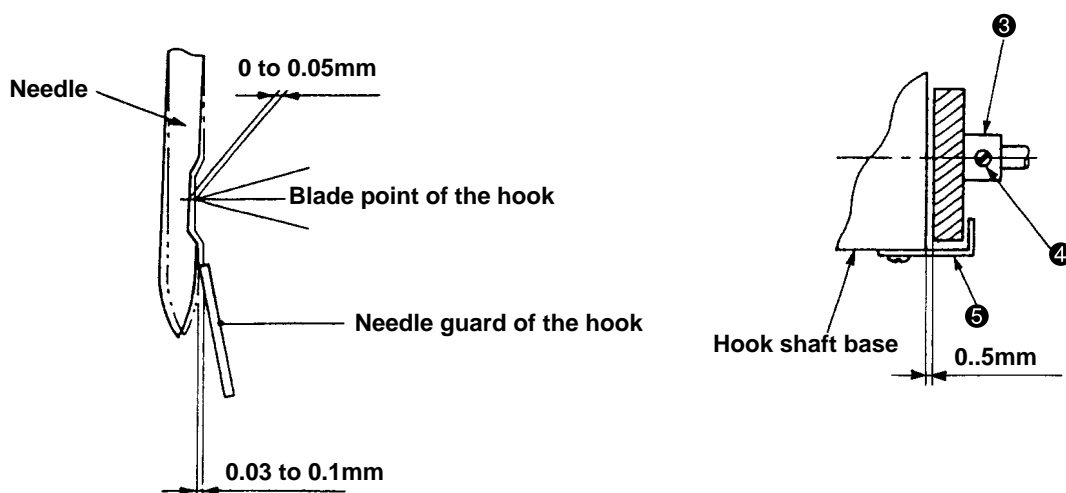
For more details, refer to 5.-(1)-3) Needle bar height.

For the LH-3528 and 3528-7 by the way, use the engraved marker line of the needle bar.

3. The clearance between the needle and the hook blade tip shall be the specified size. (For more details, refer to 5.-(2)-2) Clearance between the needle and the blade point of the hook.)

In regard to the positioning of the lower shaft gear ③, tighten the screw ④ where a clearance of 0.5mm is secured toward the end surface of the hook shaft base.

The lower shaft gear guide ⑤ shall not be removed.

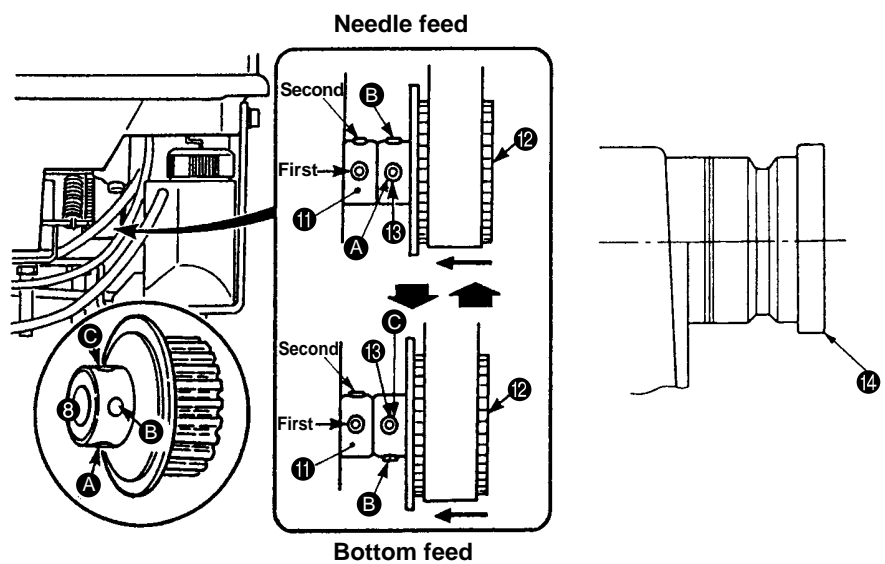
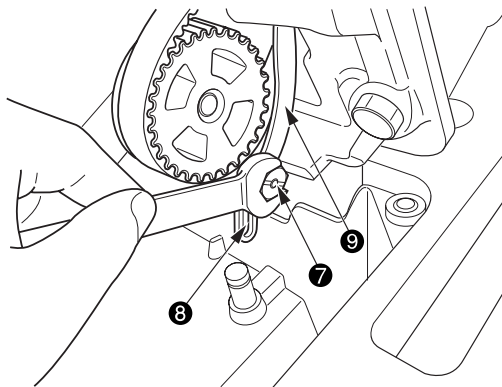
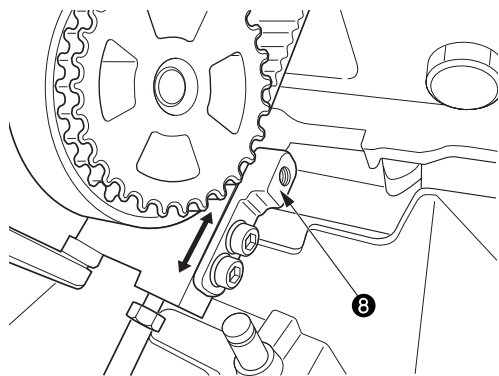
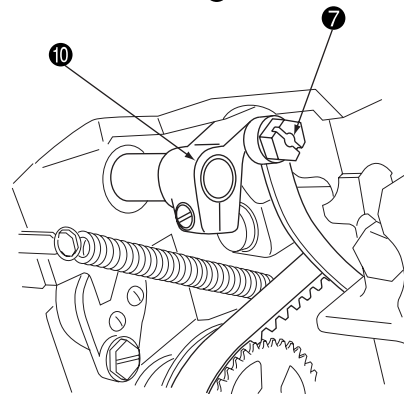
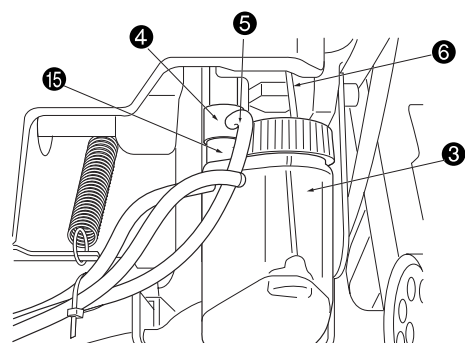
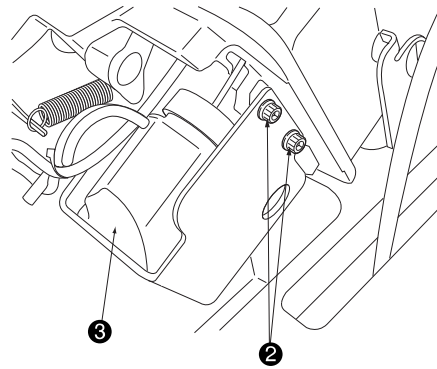
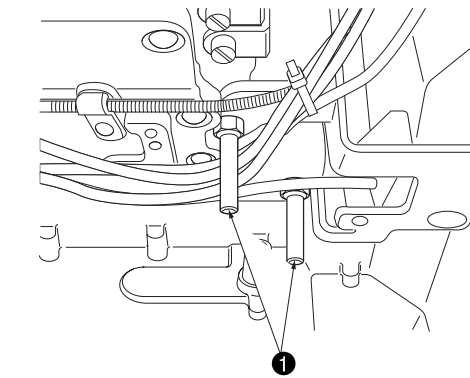


4. When attaching the presser foot, confirm that the needle does not come in contact with the hook.

7. Needle feed/bottom feed changeover

(1) Method of Needle feed ⇒ Bottom feed changeover

(2) Method of Bottom feed ⇒ Needle feed changeover



(1) Method of Needle feed ⇒ Bottom feed changeover

1. Remove the needle feed gauge (throat plate, feed dog, presser).
2. Loosen the studs ❶ (2 positions).
3. Loosen the setscrews ❷ (2 positions) and dislodge the oil tank ❸. At that time, take out the pipe ❹ of the oil joint section ❺ and also the pipe ❻ that is inserted in the oil tank ❸.

(Caution) 1. Lightly support the oil tank ❸ by hand so that it does not fall down.

2. Be careful not to bend the float bar ❺.

3. Put the removed oil tank ❸ on the table, without giving an unreasonable force to it.

4. Remove the hinge screw ❷.
5. Confirm that the fixing base ❸ is mounted.
6. Change over the needle bar rocking rod ❹ and fix it to the fixing base ❸ by means of the hinge screw ❷.
7. Mount the bottom feed gauge (feed dog, throat plate) and adjust the needle entry.
8. If the needle entry is found inadequate, adjust the vertical positioning (in the direction of the arrow) of the fixing base ❸.
9. Loosen two setscrews ❻ of the lower shaft sprocket ❿.

(Caution) Loosen the screws in the order of Second Screw → First Screw.

10. Completely remove one piece of the first screw ❶ from the lower shaft sprocket ❿.

(Caution) Exchange the first screw ❶ with ❸.

11. Do not rotate the lower shaft, but turn the hand wheel ❿ by 180°.

12. Check the flat section of the lower shaft, put the removed first screw ❶ in ❸, and fix it. Since then, fix the screw ❷.

(Caution) 1. Position of the lower shaft rear bearing ❶ first coincides with that of the lower shaft sprocket ❿ ❸. (There is a flat section in the lower shaft.)

2. Lightly push the lower shaft sprocket ❿ in the direction of the arrow and make sure there is no rattling condition.

13. Fix the oil tank ❸ with the setscrews ❷ (2 positions). At that time, connect the pipe ❹ to the oil joint section ❺ and also the pipe ❻ to the oil tank ❸, respectively.

(Caution) Be careful not to bend the float bar ❺.

14. Tighten the studs ❶ (2 positions).

15. After the oil tank ❸ has been installed, reconfirm the conditions of piping layout and connections.

16. Mount the bottom feed presser.

(Caution) If no problem is found, raise the sewing machine and reconfirm its operating condition. At that time, trial operation should be carried out at a low speed, without fail.

(2) Method of Bottom feed ⇒ Needle feed changeover

The procedures for the work below are the reversed steps of [(1) Method of Needle feed ⇒ Bottom feed changeover].

1. Remove the bottom feed gauge (throat plate, feed dog, presser).
2. Similarly as for the method of Needle Feed⇒ Bottom Feed changeover, loosen the studs ❶ (2 positions) and remove the oil tank ❸, the pipe ❹ of the oil joint section ❺ and also the pipe ❻ that is inserted in the oil tank ❸.

(Refer to the steps 2. to 3. above.)

3. Remove the hinge screw ❷ of the needle bar rocking rod ❹ that is fixed to the fixing base ❸. Fix the needle bar rocking rod ❹ to the needle bar rocking feed arm ❿ by means of the hinge screw ❷.

4. Loosen two setscrews ❻ of the lower shaft sprocket ❿.

(Caution) Loosen the screws in the order of First Screw → Second Screw.

5. Completely remove one piece of the second screw ❷ from the lower shaft sprocket ❿.

(Caution) Exchange the first screw ❷ with ❶.

6. Do not rotate the lower shaft, but turn the hand wheel ❿ by 180°.

7. Check the flat section of the lower shaft, put the removed second screw ❷ in ❶, and fix it. Since then, fix the screw ❸.

(Caution) 1. Position of the lower shaft rear bearing ❶ first coincides with that of the lower shaft sprocket ❿ ❶. (There is a flat section in the lower shaft.)

2. Lightly push the lower shaft sprocket ❿ in the direction of the arrow and make sure there is no rattling condition.

8. Fix the oil tank ❸ with the setscrews ❷ (2 positions). At that time, connect the pipe ❹ to the oil joint section ❺ and also the pipe ❻ to the oil tank ❸, respectively.

(Caution) Be careful not to bend the float bar ❺.

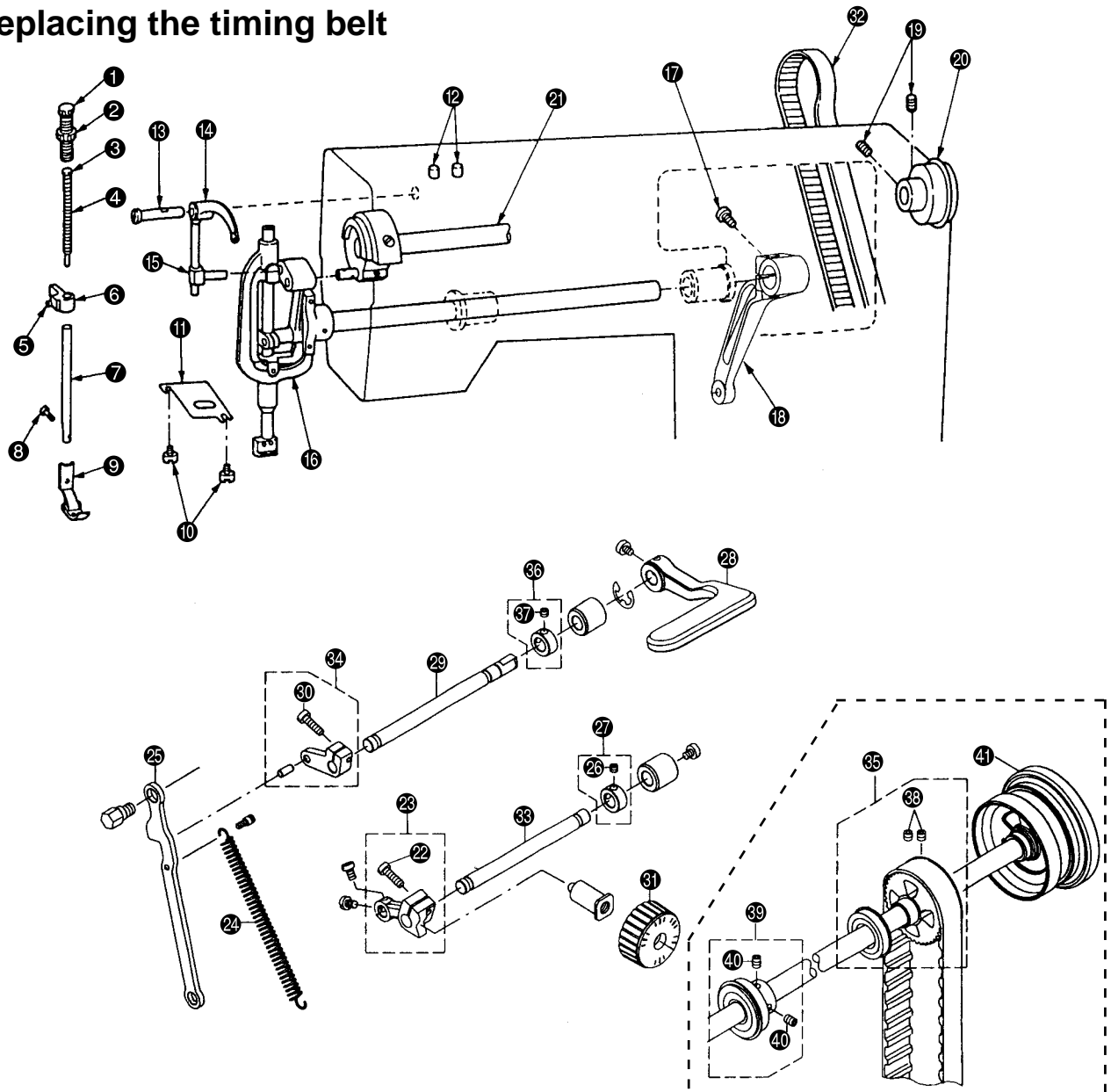
9. Loosen the studs ❶ (2 positions).

10. After the oil tank ❸ has been installed, reconfirm the conditions of piping layout and connections.

11. Mount the needle feed gauge.

(Caution) If no problem is found, raise the sewing machine and reconfirm its operating condition. At that time, trial operation should be carried out at a low speed, without fail.

8. Replacing the timing belt



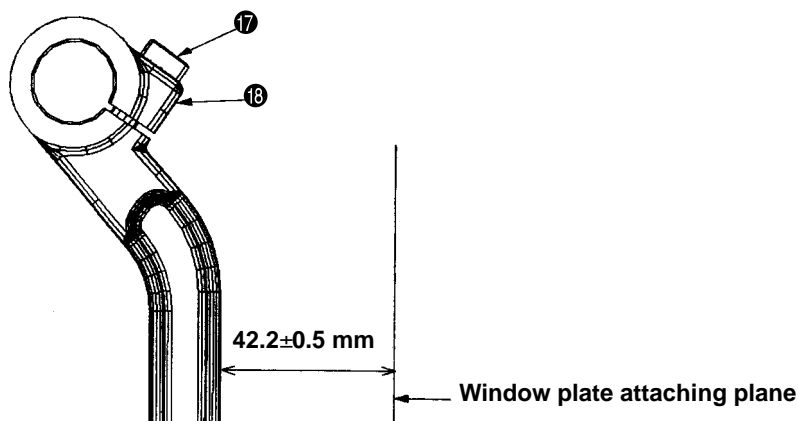
* The below-mentioned replacing procedure has been prepared for the LH-3528 as an example.
If you want to replace a timing belt for the other types of 2-needle lockstitch machines, refer to the procedure described below.

(1) How to remove the timing belt

- 1) Let the sewing machine fall down and take out the oil tank (Asm.). Remove the timing belt 32 from the lower shaft sprocket.
5.-(5) Relation between the main shaft and the lower shaft.
(Caution) Make sure not to bend the floater.
- 2) Remove the window plate and face cover.
- 3) Remove presser bar components 1 through 9.
- 4) Remove thread take-up components 12 through 15.
- 5) Remove filler plate 11 from the jaw section and screws 10.
- 6) Loosen screw 17 in needle bar rocking rear arm 18 and draw out needle bar rocking base (asm.) 16.
- 7) Loosen the setscrew 19 of the main shaft thrust holder (Asm.) 20, the setscrew 40 of 39, and the setscrew 35 of 35 in this order. Since then, dislodge the hand wheel 41 and shift the main shaft 21.
- 8) Remove feed regulator spring 24 from the feed regulator rod 25.
- 9) Set feed stitch dial 31 at 0 (zero) and loosen screw 22 in feed regulator base 23.
- 10) Loosen the setscrew 26 of the thrust collar 27 and pull out the feed regulator base shaft 33.
- 11) Loosen the setscrew 30 of the reverse feed arm 34 and then loosen the setscrew 37 of the thrust collar 36.
Pull out the reverse feed lever 28 and the reverse feed lever shaft 29.
- 12) Draw out timing belt 32 from the rear window plate of the machine arm.

(2) How to install the timing belt

- 1) Put timing belt 32 in position from the rear window plate of the machine arm. Then pass main shaft 21 through the timing belt.
- 2) To eliminate rattling from the main shaft 21, tighten the setscrew 40 of the main shaft thrust holder 39, the setscrew 38 of 35 and the setscrew 19 of 20 in this order.
- 3) Attach the hand wheel 41. At this time, turn the hand wheel 41 toward the operator side and make the hole for the setscrew No. 1 coincide with the flat portion on the main shaft 21.
- 4) Put timing belt 32 on the main shaft sprocket and hook driving shaft sprocket.
At this time, refer to “5-(5) Timing between the main shaft and the lower shaft”.
- 5) Insert the feed regulator base shaft 33 in the arm and let it pass through the thrust collar 27 and the feed regulator base 23. Then, tighten the setscrew 22. In the position where no looseness is present, tighten the setscrew 26 of the thrust collar 27.
- 6) The horizontal (right – left) position of the feed regulator base 23 is located where the center of the feed stitch dial 31 coincides with that of the cam face of the feed regulator base 23. Then, mount the feed control spring 24 on the feed regulator rod 25.
- 7) Insert the reverse feed lever 28 and the reverse feed lever shaft 29 in the arm and let them pass through the thrust collar 35 and the reverse feed arm 34. In the position where no rattling is perceived, tighten the setscrew 37 of the thrust collar 36.
- 8) In regard to the reverse feed arm 34, refer to “5-(14) Initial position of the reverse feed control lever” and tighten the setscrew 30.
- 9) Fit needle bar rocking base (asm.) 16 from the face plate and join it with needle bar rocking rear arm 18.
- 10) Assemble thread take-up components 12 through 15. At this time, confirm that there is no axial play in the thread take-up components.
- 11) Attach filler plate 11 to the jaw section with screws 10.
- 12) Assemble presser bar components 1 through 9.
- 13) Turn the hand wheel 41 to bring needle bar rocking base (asm.) 16 to the lowest position.
At this time, the feed stitch dial 31 should be set at minimum on the scale (0).
- 14) Set the needle bar to the specified dimensions described in “5-(1) Needle bar and feed dog, -1) Initial position of the needle bar.” In this state, position the needle bar rocking rear arm 18 as illustrated (Size: 42.2 ± 0.5 mm) and tighten the setscrew 17. At this time, confirm that there is no axial play in the needle bar.

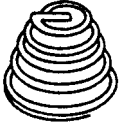

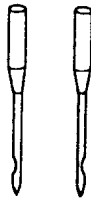
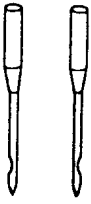

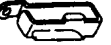





- 15) Re-confirm that needle entry is correct referring to “5-(1)-4) Needle entry”.

9. Sewing specification


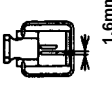
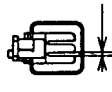
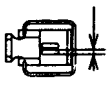

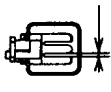
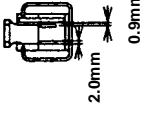
(1) Refer to the table below when the sewing specification is changed from the standard.





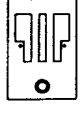
(2) Table of sewing specifications


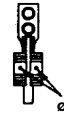
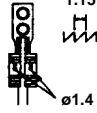
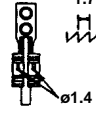

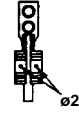
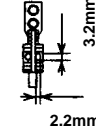
Name of part	S type	A type	G type	F type
Thread tension spring 	Part No. 22921704 Wire diameter 1.0mm	Part No. D3129555D00 Wire diameter 0.9mm	Part No. 22962005 Wire diameter 1.2mm	Part No. 22921704 Wire diameter 1.0mm D3129555D00 Wire diameter 0.9mm
Thread tension No. 2 (asm.) 	Part No. 23627359	Part No. 23627458	Part No. 23626062	Part No. 23627359 23627458 (Specifications for low tension)
Needle (standard) 	DPx5 #14 MDP500B1400	DPx5 #9 MDP500B0900	DPx5 #21 MDP500B2100	134 SES SERV7 Nm65 MC200520650
Needle (For DPx17) 	DPx17 #14 MDP170B1400	DPx17 #9 MDP170B0900	DPx17 #21 MDP170B2100	X
Thread guide (lower)  (Thread guide felt)  (Felt)  (Thread guide ASM.) 	40028707 (Thread guide (lower))	40028707 or (Thread guide (lower)) 40032896+22603708 (Thread guide felt) + (Felt)	40028707 or (Thread guide (lower)) 40034675 (Thread guide ASM.)	40028707 or (Thread guide (lower)) 40032896+22603708 (Thread guide felt) + (Felt)
Presser spring regulator 	22907406	B1505227T00A	22907406	22907406 B1505227T00A (Specifications for low tension)

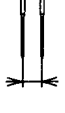

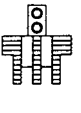



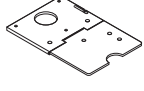
10. Table of gauge parts classified by models

(1) LH-3528



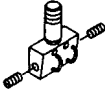


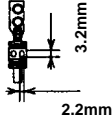
Needle gauge size			Presser foot asm.					
Code								
	inch	mm		Tip-divided	Tip-divided	Lower feed		Swivel guide
A	3/32	2.4	22637557	—	—	—	—	—
B	1/8	3.2	22637656	40035896	—	10391852	22627152	22647051
C	5/32	4.0	22637755	40035897	—	—	—	—
D	3/16	4.8	22637854	22640353	22816557	10392058	22627350	22647150
E	7/32	5.6	—	22640452	—	—	22627459	22647259
F	1/4	6.4	22638050	22640551	22816755	10392256	22627558	22647358
G	9/32	7.1	22638258	22640759	—	—	22627657	22647457
H	5/16	7.9	22638357	22640858	22816953	10392454	22627756	22647556
K	3/8	9.5	22638456	22640957	22817050	—	—	—
W	7/16	11.1	—	22641054	40033941	—	—	—
L	1/2	12.7	22638753	22641252	—	10392751	—	—
M	5/8	15.9	—	22641351	—	—	—	—
N	3/4	19.1	22638951	22641450	40033947	—	—	—
P	7/8	22.2	22639157	22641658	—	22844450	—	—
Q	1	25.4	22639256	22641757	—	22844559	—	—
R	1-1/8	28.6	22639355	22641856	40033953	—	—	—
S	1-1/4	31.8	22639454	22641955	—	—	—	—
T	1-3/8	34.9	—	22642052	—	—	—	—
U	1-1/2	38.1	—	22642151	—	—	—	—
Stitch spec.	A		★					
	F						★	★
	S			★				
	G				★			
	Lower feed					★		


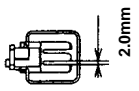
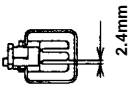


Needle gauge size			Throat plate			
Code						
	inch	mm		With taping	Lower feed	Lower feed
A	3/32	2.4	22625008	—	—	—
B	1/8	3.2	22625107	22628002	22845200	—
C	5/32	4.0	22625206	—	—	—
D	3/16	4.8	22625305	22628200	22845408	—
E	7/32	5.6	22625404	22628309	—	—
F	1/4	6.4	22625503	22628408	22845606	—
G	9/32	7.1	22625602	22628507	—	—
H	5/16	7.9	22625701	22628606	22845804	—
K	3/8	9.5	22625800	—	—	—
W	7/16	11.1	22625909	—	—	—
L	1/2	12.7	22626006	—	—	22846109
M	5/8	15.9	22626105	—	—	—
N	3/4	19.1	22626204	—	—	—
P	7/8	22.2	22626303	—	—	22846406
Q	1	25.4	22626402	—	—	22846505
R	1-1/8	28.6	22626501	—	—	—
S	1-1/4	31.8	22626600	—	—	—
T	1-3/8	34.9	22626709	—	—	—
U	1-1/2	38.1	22626808	—	—	—
Stitch spec.	A		Spec. common	Spec. common		
	F					
	S					
	G					
	Lower feed					★

Needle gauge size			Feed dog					
Code								
	inch	mm	$\phi 1.2$	$\phi 1.4$	$\phi 1.4$	$\phi 1.7$	$\phi 2.2$	$\phi 1.7$ 3.2mm 2.2mm
A	3/32	2.4	40033714	—	—	—	—	—
B	1/8	3.2	40033715	40035883	40033563	40051705	—	—
C	5/32	4.0	40033716	—	—	40025784	—	—
D	3/16	4.8	40033718	40035884	40033564	40025785	B1613512D0H	40025801
E	7/32	5.6	—	40035885	40033565	40025786	—	—
F	1/4	6.4	40033720	40035886	40033566	40025787	B1613512F0H	40025803
G	9/32	7.1	40033722	40035887	40033567	40025788	—	—
H	5/16	7.9	40033723	40035888	40033568	40025789	B1613512H0H	40025805
K	3/8	9.5	40033724	—	—	40025790	B1613512K0H	40025806
W	7/16	11.1	—	—	—	40025791	B1613512W0H	40025807
L	1/2	12.7	40033727	—	—	40025792	—	—
M	5/8	15.9	—	—	—	40025793	—	—
N	3/4	19.1	40033729	—	—	40025794	B1613512N0H	40025810
P	7/8	22.2	40033731	—	—	40025795	—	—
Q	1	25.4	40033732	—	—	40025796	—	—
R	1-1/8	28.6	40033733	—	—	40025797	B1613512R0H	40025813
S	1-1/4	31.8	40033734	—	—	40025798	—	—
T	1-3/8	34.9	—	—	—	40025799	—	—
U	1-1/2	38.1	—	—	—	40025800	—	—
Stitch spec.	A		★					
	F			★	★			
	S					★		
	G						★	★
	Lower feed							







Needle gauge size			Feed dog		Needle clamp asm.	Sliding plate asm.		
Code								
	inch	mm	Lower feed	Lower feed		(Left)	(Right)	(Left) option
A	3/32	2.4	—	—	40035875	22601058	22600555	40031536
B	1/8	3.2	23205107	—	40026027			
C	5/32	4.0	—	—	40026029			
D	3/16	4.8	23205305	—	40026031			
E	7/32	5.6	—	—	40026033			
F	1/4	6.4	23205503	—	40026035			
G	9/32	7.1	—	—	40026037			
H	5/16	7.9	22847800	—	40026039			
K	3/8	9.5	—	—	40026041			
W	7/16	11.1	—	—	40026043			
L	1/2	12.7	—	22848105	40026045	22601157	22600654	40045729
M	5/8	15.9	—	—	40026047			
N	3/4	19.1	—	—	40026049			
P	7/8	22.2	—	22848402	40026051			
Q	1	25.4	—	22848501	40026053			
R	1-1/8	28.6	—	—	40026055	22601256	22600753	40045730
S	1-1/4	31.8	—	—	40026057			
T	1-3/8	34.9	—	—	40026059			
U	1-1/2	38.1	—	—	40026061			
Stitch spec.	A				Spec. common			
	F							
	S							
	G							
	Lower feed		★	★				




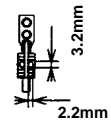
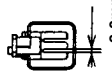
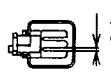
(2) LH-3528-7




Needle gauge size			Throat plate	Needle clamp asm.	Feed dog		
Code							
	inch	mm					
B	1/8	3.2	40035881	40026027	40035890	—	—
C	5/32	4.0	40025485	40026029	40025817	—	—
D	3/16	4.8	40025490	40026031	40025818	40035891	40025831
E	7/32	5.6	40025491	40026033	40025819	—	—
F	1/4	6.4	40025492	40026035	40026715	40035892	40025833
G	9/32	7.1	40025493	40026037	40025820	—	—
H	5/16	7.9	40025494	40026039	40025821	—	—
K	3/8	9.5	40025495	40026041	40025822	40035893	40025836
W	7/16	11.1	—	—	—	—	—
L	1/2	12.7	40025498	40026045	40025824	40035894	40025838
M	5/8	15.9	40025499	40026047	40025825	—	—
N	3/4	19.1	40025500	40026049	40025826	40035895	40025840
P	7/8	22.2	40025502	40026051	40025827	—	—
Q	1	25.4	40025503	40026053	40025828	—	—
R	1-1/8	28.6	40025504	40026055	40025829	—	—
S	1-1/4	31.8	40025505	40026057	40025830	—	—
Stitch spec.	S		Spec. common	Spec. common	★	★	★
	G						

Needle gauge size			Presser foot asm.		Sliding plate asm.	
Code						
	inch	mm	Tip-divided	Tip-divided	(Left)	(Right)
B	1/8	3.2	40035896	—	—	—
C	5/32	4.0	40035897	—	40025247	40025235
D	3/16	4.8	22640353	22816557		
E	7/32	5.6	22640452	—		
F	1/4	6.4	22640551	22816755		
G	9/32	7.1	22640759	—		
H	5/16	7.9	22640858	—		
K	3/8	9.5	22640957	22817050		
W	7/16	11.1	—	—		
L	1/2	12.7	22641252	22817159	40025248	40025236
M	5/8	15.9	22641351	—		
N	3/4	19.1	22641450	40033947		
P	7/8	22.2	22641658	—	40025249	40025239
Q	1	25.4	22641757	—		
R	1-1/8	28.6	22641856	—		
S	1-1/4	31.8	22641955	—	40025250	40025240
Stitch spec.	S		★	★	Spec. common	Spec. common
	G					

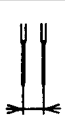





(3) LH-3568



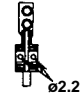
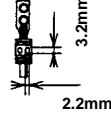
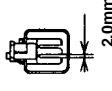
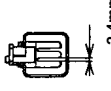
Needle gauge size			Throat plate	Needle clamp asm. (DP5)		Needle clamp asm. (DP17)	
Code							
	inch	mm					
B	1/8	3.2	22625107	40035761	40035771	40035877	40035878
C	5/32	4.0	22625206	40035762	40035772	40026063	40026084
D	3/16	4.8	22625305	40035763	40035773	40026065	40026086
E	7/32	5.6	22625404	40035764	40035774	40026067	40026088
F	1/4	6.4	22625503	40029561	40029562	40026069	40026090
G	9/32	7.1	22625602	40035765	40035775	40026070	40026091
H	5/16	7.9	22625701	40035766	40035776	40026072	40026093
K	3/8	9.5	22625800	40035767	40035777	40026074	40026095
L	1/2	12.7	22626006	40035768	40035778	40026076	40026097
M	5/8	15.9	22626105	40035769	40035779	40026078	40026099
N	3/4	19.1	22626204	40035770	40035780	40026080	40026101
Stitch spec.	S		Spec. common	Spec. common	Spec. common	Spec. common	Spec. common
	G						




Needle gauge size			Feed dog			Presser foot asm.	
Code							
	inch	mm					
B	1/8	3.2	40051705	—	—	40035896	—
C	5/32	4.0	40025784	—	—	40035897	—
D	3/16	4.8	40025785	B1613512D0H	40025801	22640353	22816557
E	7/32	5.6	40025786	—	—	22640452	—
F	1/4	6.4	40025787	B1613512F0H	40025803	22640551	22816755
G	9/32	7.1	40025788	—	—	22640759	—
H	5/16	7.9	40025789	—	—	22640858	—
K	3/8	9.5	40025790	B1613512K0H	40025806	22640957	22817050
L	1/2	12.7	40025792	—	—	22641252	—
M	5/8	15.9	40025793	—	—	22641351	—
N	3/4	19.1	40025794	B1613512N0H	40025810	22641450	40033947
Stitch spec.	S		★			★	
	G			★	★		★

Needle gauge size			Sliding plate asm.	
Code				
	inch	mm		
B	1/8	3.2	22601058	22600555
C	5/32	4.0		
D	3/16	4.8		
E	7/32	5.6		
F	1/4	6.4		
G	9/32	7.1		
H	5/16	7.9		
K	3/8	9.5	22601157	22600654
L	1/2	12.7		
M	5/8	15.9		
N	3/4	19.1		
Stitch spec.	S		Spec. common	Spec. common
	G			

(4) LH-3568-7

Needle gauge size		Throat plate	Needle clamp asm. (DP5)		Needle clamp asm. (DP17)		
Code							
	inch	mm		(Left)	(Right)	(Left)	(Right)
B	1/8	3.2	40035881	40035761	40035771	40035877	40035878
C	5/32	4.0	40025485	40035762	40035772	40026063	40026084
D	3/16	4.8	40025490	40035763	40035773	40026065	40026086
E	7/32	5.6	40025491	40035764	40035774	40026067	40026088
F	1/4	6.4	40025492	40029561	40029562	40026069	40026090
G	9/32	7.1	40025493	40035765	40035775	40026070	40026091
H	5/16	7.9	40025494	40035766	40035776	40026072	40026093
K	3/8	9.5	40025495	40035767	40035777	40026074	40026095
L	1/2	12.7	40025498	40035768	40035778	40026076	40026097
M	5/8	15.9	40025499	40035769	40035779	40026078	40026099
N	3/4	19.1	40025500	40035770	40035780	40026080	40026101
Stitch spec.	S		Spec. common	Spec. common	Spec. common	Spec. common	Spec. common
	G						

Needle gauge size		Feed dog			Presser foot asm.		
Code							
	inch	mm	$\phi 1.7$	$\phi 2.2$	Option 3.2mm 2.2mm	Tip-divided 2.0mm	Tip-divided 2.4mm
B	1/8	3.2	40035890	—	—	40035896	—
C	5/32	4.0	40025817	—	—	40035897	—
D	3/16	4.8	40025818	40035891	40025831	22640353	22816557
E	7/32	5.6	40025819	—	—	22640452	—
F	1/4	6.4	40026715	40035892	40025833	22640551	22816755
G	9/32	7.1	40025820	—	—	22640759	—
H	5/16	7.9	40025821	—	—	22640858	—
K	3/8	9.5	40025822	40035893	40025836	22640957	22817050
L	1/2	12.7	40025824	40035894	40025838	22641252	22817159
M	5/8	15.9	40025825	—	—	22641351	—
N	3/4	19.1	40025826	40035895	40025840	22641450	40033947
Stitch spec.	S		★			★	
	G			★	★		★

Needle gauge size		Sliding plate asm.		
Code				
	inch	mm	(Left)	(Right)
B	1/8	3.2	—	—
C	5/32	4.0		
D	3/16	4.8		
E	7/32	5.6		
F	1/4	6.4	40025247	40025235
G	9/32	7.1		
H	5/16	7.9		
K	3/8	9.5		
L	1/2	12.7		
M	5/8	15.9	40025248	40025236
N	3/4	19.1		
Stitch spec.	S		Spec. common	Spec. common
	G			

11. List of the major components

(1) List of motor, motor pulley and V-belt

	Without thread trimmer		With thread trimmer		
Model	LH-3528, LH-3568		LH-3528-7, LH-3568-7		
Frequency	50Hz	60Hz	Common to 50 Hz and 60 Hz		
Motor	Clutch motor MTL2200040S		SC-500	SC-910	EC-10B
			M50 (40018481)	M91 (40006180)	MTSE7423756 (Part No. of the completed set)
Motor pulley	ø75 MTKP0070000	ø65 MTKP0060000	ø110 40018577	ø75 MTSP0070A00	ø65 MTSE8110605
V-belt	43" MTJVH00430A	42" MTJVH00420A	43" MTJVH00430A	40" MTJVH0040A	44" MTSE8160344

(2) List of consumable parts

Without thread trimmer		With thread trimmer	
LH-3528, LH-3568		LH-3528-7, LH-3568-7	
Part No.	Part name	Part No.	Part name
MDP500B* *00	Needle DPx5 (Caution)1.	MDP500B* *00	Needle DPx5 (Caution) 1.
B9117051000	Bobbin	10210805	Bobbin
40036682	Latch hook (asm.) *1	40036683	Latch hook (asm.) with thread trimmer *3
40036684	Separately driven needle hook (Asm.) *2	40036685	Thread trimmer separately driver needle hook (Asm.) *4
22603708	Thread guide (lower) felt	40012403	Moving knife
		40012404	Counter knife
		40034675	Thread guide (lower) needle thread clamp (Asm.)
		22603708	Thread guide (lower) felt
		10209203	Wiper (3/32" to 3/8")
		10209500	Wiper (7/16" to 5/8")
		10209807	Wiper (3/4" to 7/8")
		10209906	Wiper (1" to 1 1/4")

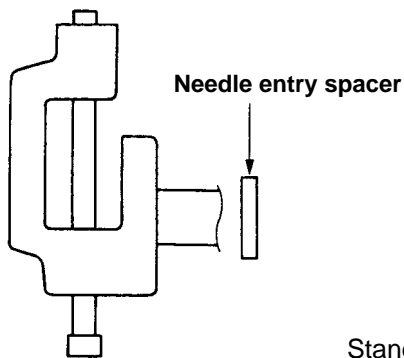
- (Caution)** 1. The needle Part No. * indicates the needle size.
2. * 1 to 4 denote the model selection.

Latch hook	40036682	LH-3528	Without a thread trimmer
	40036683	LH-3528-7	With a thread trimmer
Cap hook	40036684	LH-3568	Without a thread trimmer
	40036685	LH-3568-7	With a thread trimmer

(3) Other replacing or selected parts

Without thread trimmer		With thread trimmer	
LH-3528, LH-3568		LH-3528-7, LH-3568-7	
Part No.	Part name	Part No.	Part name
40028652	Timing belt	40028652	Timing belt
B3128051000	Thread take-up spring (A)	B3128051000	Thread take-up spring (A)
B3128527000	Thread take-up spring (B)	B3128527000	Thread take-up spring (B)
_____	_____	10111508	Idling prevention spring
_____	_____	22653802	Idling prevention sheet

1) Needle entry spacer



Standard ©

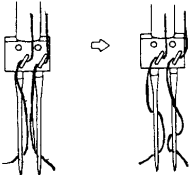
Size ±0.015 (mm)	Part No.	Part name.
1.1	22606206	Needle entry spacer Y
1.2	22606305	Needle entry spacer Z
1.3	22607600	Needle entry spacer A
1.4	22607709	Needle entry spacer B
1.5	B1438512B00	Needle entry spacer C
1.6	22607808	Needle entry spacer D
1.7	22607907	Needle entry spacer E
1.8	22606404	Needle entry spacer F

2) Hook shaft gear



Part No.	Part name
40028560	Hook shaft screw gear A
40028561	Hook shaft screw gear B
40028562	Hook shaft screw gear C
40028563	Hook shaft screw gear D
40040549	Hook shaft screw gear E
40040550	Hook shaft screw gear F

12. Troubles and corrective measures

Trouble	Case (1)	Case (2)	Check and Corrective measures	
1. Thread breakage	1-1) The groove on the bobbin casestopper of the throat plate has scratches.		Polish the groove on the bobbin case stopper. (To be finished with a buff)	
	1-2) The needle thread tension is too high.		Adjust the needle thread tension to a proper level.	
	1-3) Needle-to-hook timing is not properly adjusted.	3-A) The clearance is inadequate between the hook and the bobbin case stopper.		Adjust the clearance provided between the hook and the bobbin case opener to 0.2 mm.
		3-B) The clearance is inadequate between the needle and the blade point of the hook.		Adjust the clearance provided between the needle and the blade point of the hook to 0.05 mm.
		3-C) The clearance is inadequate between the inner hook and the throat plate.		Check the clearance between the inner hook and the throat plate.
		3-D) Lift of the needle bar and the needle bar height are inadequate.		Adjust the lifting amount of the needle bar and the height of the needle bar properly.
	1-4) Amount of oil in the hook is insufficient.	4-A) Insufficient amount of oil in the hook.		Properly adjust the amount of oil in the hook.
	1-5) Operating range and pressure of the thread take-up spring are improper.	5-A) The operating range and the pressure of the thread take-up spring are inadequate.		Properly adjust the thread take-up spring. (Weakened to increase the amount of movement)
	1-6) Blade point of the hook has scratches.			Grind the blade point of the hook.
	1-7) Periphery of the needle hole in the feed dog has scratches.			Grind the periphery of the needle hole in the feed plate. (Polished with fine sandpaper)
	1-8) The machine head is not properly threaded.			Refer to the Instruction Manual, 11. How to pass the needle thread.
	1-9) The needle is not properly installed.	9-A) The needle direction is reversed.		Refer to the Instruction Manual, 8. How to set up the needle.
	1-10) The needle is bent or has a blunt point.	10-A) Defective needle		Replace the needle with a new one.
	1-11) The presser foot is not properly installed.			Install the presser foot while facing it in the correct direction.
1-12) The needle thread untwists.	12-A) If thread is likely to break especially when using a tetron thread: 1) Minimize the needle thread tension and the thread take-up spring pressure as long as stitches are neatly finished. 2) Wind the thread round the needles to reduce the frequency of the trouble.			
1-13) Idling stitches are produced.				
1-14) A thread loop is not made with consistency when the blade point of the hook clamps the needle thread.			Use the thread guide equipped with a felt pad.	

Trouble	Case (1)	Case (2)	Check and Corrective measures
2. Loose stitches are produced	Same as the aforementioned causes given in Item 1, Thread breaking. Other causes and adjustments are described below in addition to them.		
	2-1) Bobbin fails to move smoothly.		Replace the bobbin or the hook.
	2-2) The clearance provided between the hook and the bobbin case opener is too large.		Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
	2-3) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.
	2-4) The thread path is poorly finished.		Polish it with fine sandpaper or buff it up.
	2-5) The clearance is insufficient between the inner hook and the throat plate.		Adjust the clearance provided between the bobbin case and the throat plate to 0.9mm.
	2-6) No bobbin thread is entered in the fork section of the thread tension spring in the bobbin case.		Correct the threading in the bobbin case.
	2-7) Bobbin thread tension is low.		Adjust the thread tension.
	2-8) The winding condition of the bobbin thread is improper.		Weaken the bobbin thread winder tension.
3. Puckering frequently occurs.	3-1) The needle thread tension is too high.		Minimize the needle thread tension as long as stitches are neatly finished.
	3-2) The bobbin thread tension is too high.		Minimize the bobbin thread tension as long as stitches are neatly finished.
	3-3) The tension of thread take-up spring is too high.		Minimize the thread take-up spring tension as long as stitches are neatly finished.
	3-4) Operating range of the thread take-up spring too large.		Minimize the operating range of the thread take-up spring as long as stitches are neatly finished.
	3-5) Presser foot pressure is too low.		Increase the presser foot pressure.
	3-6) Sewing speed is too high. (The number of revolutions of the motor is too large.)		Reduce the sewing speed.

Trouble	Case (1)	Case (2)	Check and Corrective measures
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4. Stitch skipping frequency occurs

Same as the aforementioned causes of [1-3) Needle-to-hook timing] in the "Thread breakage"

4-1) Presser foot pressure is too low.

Increase the pressure of the presser.
(Tighten the presser adjusting screw.)

4-2) Blade point of the hook is blunt.

2-A) The shape of the hook blade tip is improper.

Correct the blade point of the hook or replace the hook the hook with a new one.

4-3) The needle guard of the hook fails to work.

3-A) The clearance is inadequate between the needle guard and the needle.

Adjust the needle guard of the hook so that it works normally.

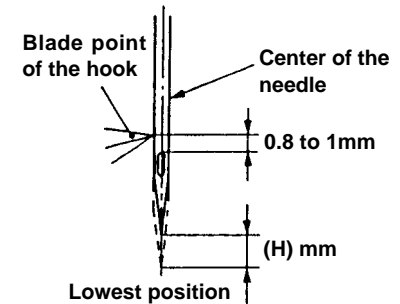
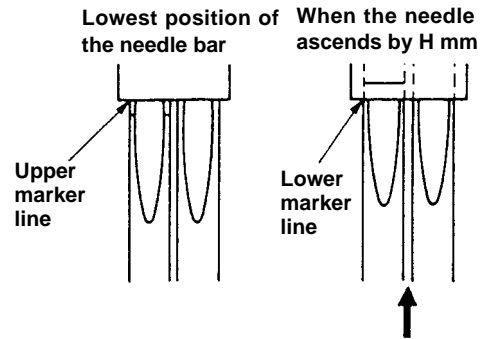
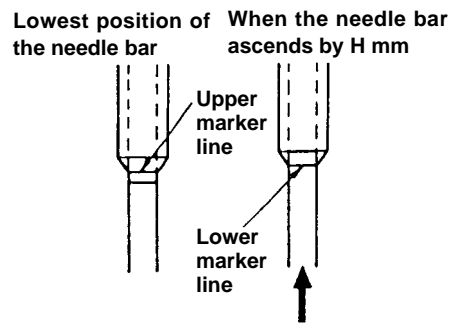
4-4) Improper selection of the needle

4-A) The needle is too thick or thin for the thread.

Change the needle count. (To a thinner or thicker size)

4-5) A heavy eight material is used.

If stitch skipping is likely to occur particularly when using a spun thread:
Refer to "(2) Needle-to-hook relation."



Stitch skipping is not likely to occur when H mm is adjusted 2.4 to 2.6mm. If H (mm) is excessively increased, loosened stitches will result. So, be careful

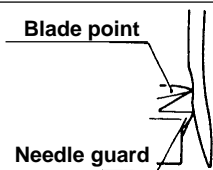
4-6) When a synthetic or thin thread is used

Decreased when a thread is wound around the needle.
1. Same as 12-A) Thread breaking

Trouble	Case (1)	Case (2)	Check and Corrective measures	
5. Failure in needle thread trimming	5-1) Thread trimming timing is not properly adjusted.		Properly adjust the thread trimming timing.	
	5-2) Top end of the moving knife has scratches or bent.		Replace the moving knife with a new one.	
	5-3) Needle-to-hook relation is not properly adjusted.	3-A) The clearance provided between the hook and the bobbin case opener.		Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
		3-B) The clearance provided between the needle and the blade point of the hook.		Adjust the clearance provided between the needle and the blade point of the hook to 0.05mm.
		3-C) The clearance provided between the bobbin case and the throat plate.		Adjust the clearance provided between the bobbin case and the throat plate to 0.9mm.
3-D) Lift of the needle bar and the needle bar height.			Adjust the lifting amount of the needle bar and the height of the needle bar properly.	
5-4) The moving knife is improperly positioned.		Adjust the longitudinal position of the moving knife.		
5-5) Operating range of the thread take-up spring is too small.		Adjust the operating range of the thread take-up spring using the thread take-up spring stopper.		
6. Failure in bobbin thread trimming	6-1) Top end of the moving knife is positioned too low.	1-A) Position of the moving knife blade.	Replace the moving knife with a new one.	
	6-2) The hook is positioned too high.		Check the height of the hook.	
	6-3) Top end of the moving knife has scratches or bent.		Replace the moving knife with a new one.	
	6-4) Needle slot in the feed dog (throat plate) is too large.		Replace the feed dog (throat plate) with one that has a needle slot of appropriate size.	
	6-5) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.	
	6-6) Blade point of the hook has worn out.		Replace the hook with a new one.	
	6-7) The clearance provided between the needle and the blade point of the hook is not properly adjusted.			

(Caution)

If the clearance between the needle and the blade point of the hook is adjusted when the needle guard works, the needle may bend.



Trouble	Case (1)	Case (2)	Check and Corrective measures
7. Bobbin case idles at the time of thread trimming.	7-1) Thread is not wound round the bobbin in the correct direction.		Wind the thread round a bobbin in the direction opposite to the direction of rotation of the hook.
	7-2) The bobbin is wound with thread of which amount exceeds 80% of its capacity.	2-A) Amount of thread wound around the bobbin.	Wind the bobbin with thread until 80% of its capacity is reached.
	7-3) Pressure of the idling prevention spring is too low.		Replace the idling prevention spring with a new one.
		3-A) Idling prevention sheet is not used.	Use an idling prevention sheet with the machine.
	7-4) A bobbin made of iron is used.	4-A) Discrepancy in bobbin types	Replace the present bobbin with a hard alumite bobbin specified for the thread trimming sewing machine.
7-5) Thread path on the hook is poorly finished.		Grind the thread path on the hook or replace the hook with a new one.	
8. Stitch skipping at the start of sewing Slip-off the thread at the start of sewing	8-1) The needle-up stop timing is excessively advanced.	1-A) Position of the white maker dot engraved on the handwheel and the marker dot engraved on the machine arm when the sewing machine stops with its needle up.	Properly adjust the needle-up stop position of the sewing machine.
	8-2) Bobbin thread presser spring fails to clamp the bobbin thread after thread trimming.	2-A) The thread is not clamped under the moving knife after thread trimming.	Adjust the position of the moving knife or replace the thread presser with a new one.
	8-3) The feed dog is positioned too high.		Adjust the height of the feed dog to 1mm.
	8-4) Pressure of the thread take-up spring is too high or the stroke of the spring is too large.		Decrease the pressure of the thread take-up spring or reduce the stroke of the spring.
	8-5) Length of thread remaining at the needle eyelet is insufficient.		Adjust the pretensioner to a lower value so that a longer thread remains at the needle eyelet after thread trimming.
	8-6) The needle used is too thick.		Use a thinner needle.

To be continued to the next page

Trouble	Case (1)	Case (2)	Check and Corrective measures
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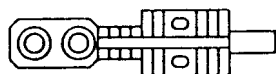
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8-7) Needle slot in the feed dog is too large.

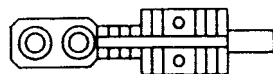
Replace the feed dog with one that has a smaller needle slot.

(Caution)

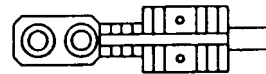
The feed comes in three different types with respect to the size of the needle slot. Use the food dog with the smallest needle slot as long as the needle does not break.



For heavy-weight materials



For medium-weight materials



For light-weight materials

8-8) Bobbin thread tension is too high.

Decrease the bobbin thread tension.

(Caution)

Also when the volume of a thin thread has become small around the bobbin, stitch skipping and unthreading can occur at the beginning of sewing.

8-9) Bobbin thread tension is too low.

9-A) Idling of the bobbin

Increase the bobbin thread tension.

8-10) The presser foot rises at the start of sewing.

Use the soft-start function.

Trouble	Case (1)	Case (2)	Check and Corrective measures
9. Length of thread remaining at the needle eyelet after thread trimming is insufficient, of the thread slips off the needle eyelet after thread trimming.	9-1) Thread is not smoothly fed from the thread stand.	1-A) Winding and unwinding of the thread are inadequate.	Adjust so that the needle is smoothly fed from the thread stand. (Caution) 1.
	9-2) Thread tension of the tension controller No. 1 is too high.		Reduce the thread tension of the tension controller No. 1.
	9-3) Operating range of the thread take-up spring is too large.		Decrease the operating range of the thread take-up spring.
	9-4) Hook of the moving knife is not properly ground.		Replace the moving knife with a new one.
	9-5) Tension disk fails to work at the time of thread trimming.	5-A) The thread tension disc does not function at the time of thread trimming.	Properly adjust the tension releaser.
	9-6) Thread trimming timing is not properly adjusted.		Properly adjust the thread trimming timing.
	9-7) Longitudinal position of the moving knife is not properly adjusted.		Adjust the longitudinal position of the moving knife properly.
	9-8) Needle-to-hook relation is not properly adjusted.	8-A) The clearance provided between the hook and the bobbin case opener is too large.	Adjust the clearance provided between the hook and the bobbin case opener to 0.2mm.
		8-B) The clearance provided between the bobbin case and the throat plate is too small.	Adjust the clearance provided between the bobbin case and the throat plate to 0.9mm.
	9-9) The needle and the bobbin case stopper have scratches.		Correct the needle and the bobbin case stopper or replace them with new one.
	9-10) The moving knife fails to cut the thread sharp.		Replace the moving knife with a new one.
	9-11) Thread is cut outside the material.		Use the thread guide equipped with a felt pad.
		Actuate the thread trimmer with the sewing speed reduced if the thread is cut outside the material.	
9-12) The felt pad of the thread guide equipped with a felt pad has a thread passing mark and is flattened.		Replace the felt (22603708) with a new one.	

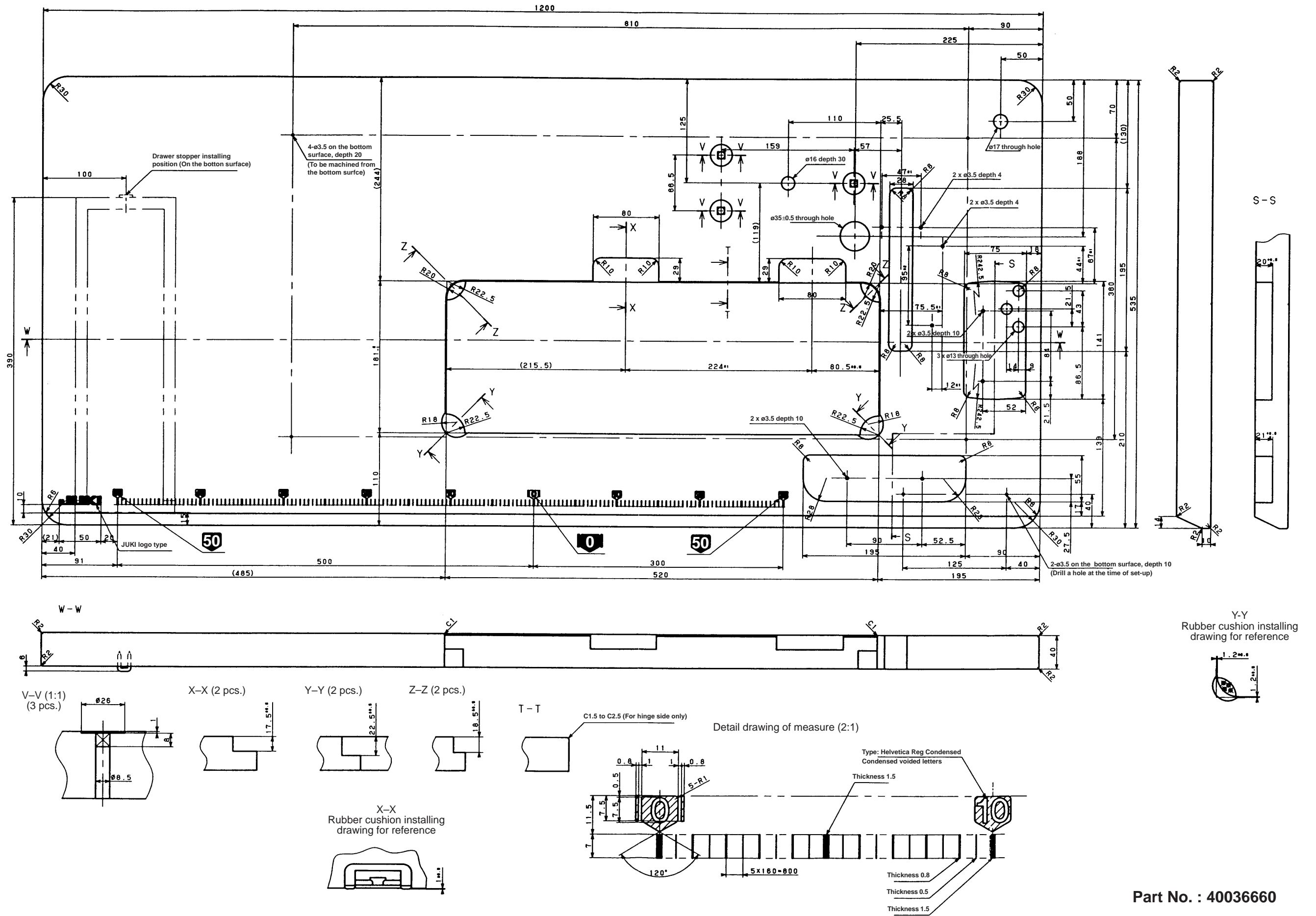
(Caution)

1. When using a synthetic thread, the thread is likely to be wound round the thread stand. In this case, use the thread standing guide arm (asm.) supplied with the sewing machine.

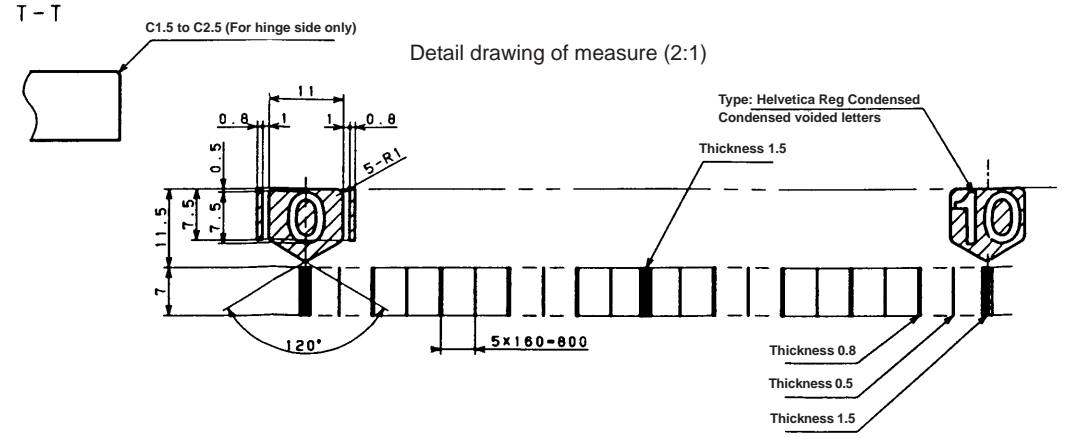
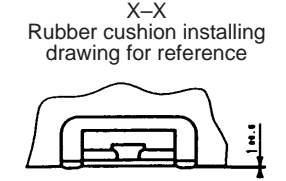
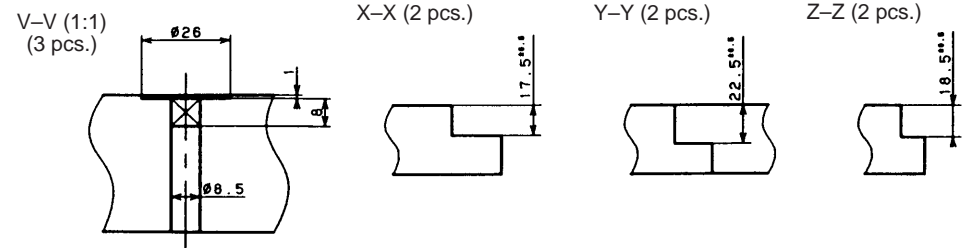
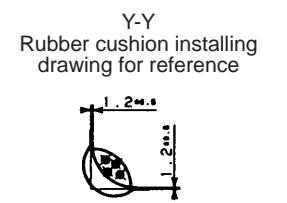
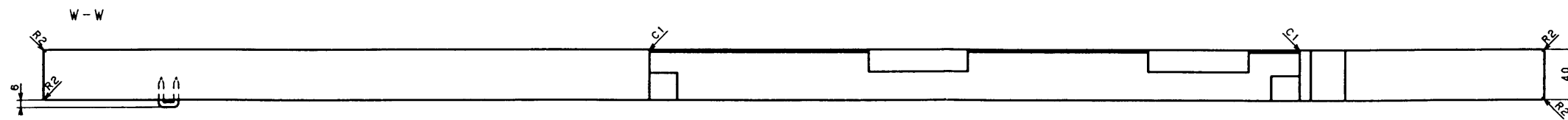
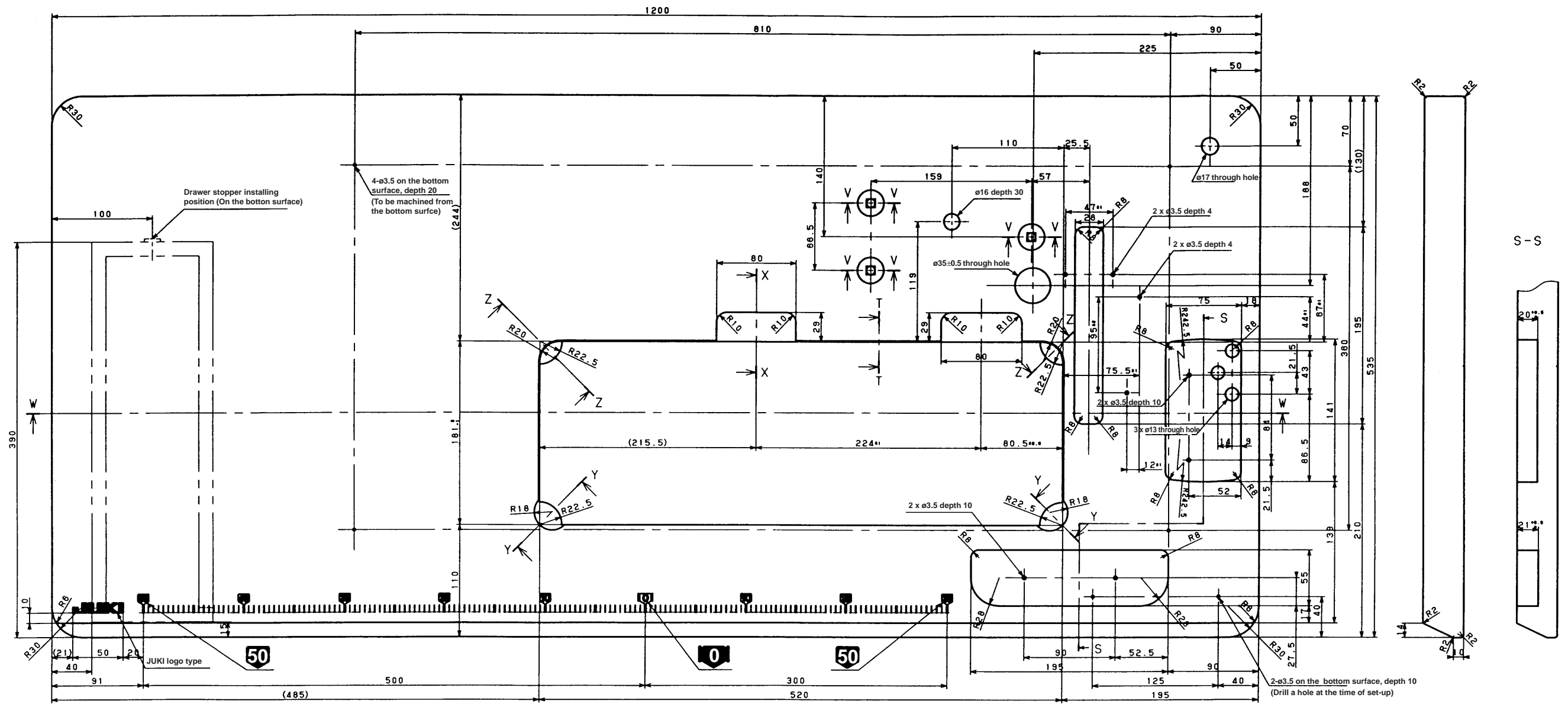
Trouble	Case (1)	Case (2)	Check and Corrective measures
10. The wiper comes in contact with the needle.	10-1) The wiper is improperly positioned.		Adjust so that the wiper spreads the thread properly.
	10-2) The needle-up stop position of the machine is improper.	2-A) Position of the marker dot engraved on the hand wheel does not coincide with that on the machine arm when the sewing machine stops with its needle up.	Properly adjust the needle-up stop position of the sewing machine.
11. The wiper fails to spread the thread.	11-1) The wiper improperly positioned.		Adjust so that the wiper spreads the thread properly.
	11-2) Length of the needle thread remaining after thread trimming is excessive.	2-A) Inadequate tension of the tension controller No. 1	Adjust the tension controller No.1 so that the needle thread of 35 to 45mm remains after thread trimming.
		2-B) Defective thread trimming timing .	Properly adjust the thread trimming timing.
		2-C) Positioning of the moving knife is inadequate.	Adjust the longitudinal position of the moving knife.
	11-3) The bobbin thread clamping pressure is too high.	3-A) Inadequate tension of the thread presser spring.	Properly adjust the position of the thread presser.
11-4) The moving knife fails to cut the thread sharp.		Replace the moving knife with a new one.	

13. Drawing of the table

(1) Clutch motor specifications/EC-10B specifications



(2) SC-500 Specifications



Part No. : 40025312

MEMO

This manual uses environment-friendly soyink.



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The environmental management system to promote and conduct
①the technological and technical research, the development and design of the products in which the environmental impact is considered,
②the conservation of the energy and resources, and the recycling, in the research, development, design, distribution, sale and maintenance service of the industrial sewing machines, household sewing machines and industrial-use robots, etc. and in the sale and maintenance service of data entry system and in the purchase, distribution and sale of the household commodities including the healthcare products.



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* **The description covered in this engineer's manual is subject to change for improvement of the commodity without notice.**

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